

PSYCHOLOGICAL RESPONSE TO INJURY:

Research to support workers'
psychological responses to injury
and successful return to work

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Executive Summary

This report addresses a national priority for action under Safe Work Australia's *National Return to Work Strategy 2020-2030*, to gain a deeper understanding of workers' psychological responses to injury and to identify ways to assist them in their recovery and return to work. Safe Work Australia develops national policy to improve WHS and workers' compensation arrangements across Australia. Further information is available on their [website](#).

Background: A team of researchers from the School of Applied Psychology at Griffith University were contracted by Safe Work Australia to conduct an investigation of both published scientific literature and current organisational practices regarding employees' psychological responses to injuries and illnesses resulting in an absence from work. The findings of this investigation are summarised in this report.

Objectives: Specifically, this research sought to advance knowledge and to generate recommendations regarding:

- The types and prevalence of different psychological reactions exhibited by workers who have sustained an injury or illness;
- The known antecedents, risk factors, enablers, or barriers which put employees at risk of these psychological reactions, and when during employee recovery processes these antecedents are observed; and
- The practical processes that can be implemented to provide support for employees currently experiencing a psychological reaction to a work absence caused by an injury or illness.

Additionally, the report highlights current research gaps and future avenues of research pertaining to psychological reactions experienced by employees during their recovery and subsequent return to work.

Approach: This project employed both quantitative and qualitative methodologies. In the quantitative approach, two systematic literature reviews were conducted targeting the (1) scientific literature, and (2) the grey literature related to psychological reactions and workplace systems during employee return to work processes. In the qualitative approach, interviews were conducted with multiple return to work stakeholders to obtain practical solutions and highlight barriers to successful return to work.

Summary of findings: From the findings, the project produced six key recommendations, summarised here:

1. Enhance employee screening processes for psychological injury risk factors

Identify opportunities to more effectively target specific indicators of delayed return to work, and negative psychological reactions to injury/illness.

2. Increase early intervention and contact during employee recovery

Enhance support for earlier intervention and regular contact in return to work process.

3. Enhance support services, training and communication materials

Greater support to both injured employees and key stakeholders (including supervisors, managers, regulators, and health professionals) in managing psychological reactions and employee recovery.

4. Provide greater access to workplace accommodations

Support further development and normalisation of workplace accommodations during employee recovery.

5. Increase employee empowerment in return to work process

Greater control, autonomy, and consultation regarding return to work decisions and planning processes.

6. Conduct further research on the effectiveness of return to work interventions

Investigate the causal processes which underlie the relationship between psychological reactions and shorter return to work outcomes.

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1.0 Background: Return to Work after Injury or Illness

Return to work (RTW) following an absence due to injury or illness can be a complicated and multifaceted process. The direct costs to Australian businesses due to lost productivity associated with employee absence have been estimated at AU\$3.08 billion (from 2012 to 2013). However, this figure excludes additional costs to both individual employees (e.g., lost wages, medical costs, claims expenses), employers (e.g., absenteeism, presenteeism, insurance levy), and the wider community (Safe Work Australia, 2020). The resumption of employment following an injury or illness is a critical step in the recovery process and has been linked to both subjective wellbeing and overall life satisfaction (Vestling et al., 2003). The implications of enhancing these employee recovery processes will produce considerable benefits for both the individual worker and the wider economy.

Historically, systematic research investigating successful RTW outcomes have overlooked specific psychological reactions elicited by employees, or how these reactions effect RTW processes. Instead, research has largely targeted the **physical symptoms** of employee injury and illness, as was discussed by Lin and colleagues *“Although commonly observed following injury, few studies have focused on the effect of psychiatric symptoms on RTW following occupational injury”* (2016, p. 514). However, this singular focus is problematic, as both physical health *and* mental health can severely impact work functions, and significantly influence long-term individual wellbeing outcomes Franche and colleagues (2009) for example, reported prevalence rates of up to 43% for employee depressive symptoms following a workplace injury. Employee psychological reactions also have prognostic utility in identifying and predicting delayed RTW outcomes.

Watt and colleagues (2015) reported that *“A number of studies have indicated that psychosocial variables are of greater prognostic value in predicting chronic disability than traditional biomedical variables”* (p. 4). Similarly, Thomson et al. (2019) argued for more emphasis on understanding the psychological reactions exhibited by employees, as these (rather than physical symptoms) are used to inform how an individual perceives their illness and the coping mechanisms employed. The authors posited that *“The influence of psychological characteristics is increasingly being considered as potentially predictive of post-transplant RTW rate. For example, significant associations between subjective appraisal of work capability and RTW have been recently demonstrated”* (Thomson et al., 2019, p. 253).

This view is congruent with historical theoretical frameworks in medicine linking psychological perceptions of illness to patient expectations and recovery outcomes. The Self-Regulation Model (SRM; Leventhal et al., 1992) for example, proposed a causal relationship between an individual's beliefs regarding their injuries/illnesses and health outcomes. The SRM categorised patient illness and injury beliefs into five dimensions:

- Beliefs about what caused the injury/illness;
- Beliefs regarding symptoms exhibited;
- Beliefs about recovery time or frequency of symptoms;
- Beliefs targeting the availability, efficacy, and behaviours required for treatment;
- Beliefs about the consequences of these injuries/illnesses on the individual's life.

Leventhal and colleagues (1992) argued combinations of these beliefs influence an individual's coping mechanisms, which subsequently impact recovery outcomes for patients. Thomson and colleagues (2019) advocated for similar effects in RTW outcomes "*The way patients perceive their illness, rather than the objective signs of their physical wellbeing, has been shown to have a profound influence on patient outcomes including RTW across various health conditions*" (p. 253).

Despite this early research suggesting a link between psychological reactions and RTW outcomes, research has been slow to investigate specific psychological reactions. Some recent work has now begun to amend this observed gap in knowledge. Recent research has frequently highlighted the negative associations between RTW outcomes and the occurrence of key psychological reactions namely: depression (Cornelius et al., 2011; Lin et al., 2016; O'Neil et al., 2010; Pinheiro et al., 2016; Zieger et al., 2010), anxiety (Cornelius et al., 2011; Duijts et al., 2014; Zieger et al., 2010), occupational stress (Böttcher et al., 2013), and fear-avoidance beliefs (Aasdahl et al., 2019; Øyeflaten et al., 2016; Watt et al., 2015).

In addition to these negative outcomes, other research has adopted a focus on the *positive* cognitive and psychological reactions experienced by employees during their injury and how these positive cognitions improve the subsequent RTW processes. For example, research has identified RTW self-efficacy and beneficial outcomes for employees with musculoskeletal injuries (Black et al., 2017; Brouwer et al., 2010), back injuries (Richard et al., 2011; Rinn et al., 2020), and mental health issues (Lagerveld et al., 2017; Nigatu et al., 2017). Other research has assessed the benefits of employee autonomy and reduced job demands (Figueredo et al., 2020), enhancing return through the provision of social support (Pijpker et al., 2020), and the role of positive recovery expectations (Aasdahl et al., 2019; Dunstand et al., 2013; Løvvik et al., 2014).

Despite these observations of both the positive and negative psychological reactions to work injuries and illnesses, no current research has systematically considered these empirical findings in detail. Although some antecedents and risk factors of negative psychological reactions are known, specific research targeting these processes is scarce. Thus, the finer details of how these psychological reactions interact with both physical rehabilitation and current systems designed to facilitate early transition to work, remain unclear. To attenuate this gap, this project assessed these factors and specifically how they relate to improved psychological reactions to injury and illness (i.e., enhancing positive reactions and/or reducing barriers) and how these psychological reactions in turn, subsequently relate to successful RTW outcomes (see Figure 1 for a visual representation of this research model).

To address this aim, this report describes the three data collection methods employed by this project. First, a systematic review undertaken of the empirical research literature pertaining to the psychological reactions exhibited by injured and sick employees during their recovery and subsequent RTW. A second systematic analysis was also undertaken of the grey literature. Finally, interviews were conducted with key RTW stakeholders (see Section 6.0 for summary). This report, therefore, considers the most up to date information from multiple sources to assess the actual RTW processes that are currently employed in our organisations. Specifically, this project focused on answering these questions:

1. What are the specific psychological reactions experienced by employees and how do these influence RTW outcomes?
2. What are the specific antecedents that put employees at risk of these psychological reactions?
3. What are the current gaps in the empirical literature regarding employee psychological reactions to injury and illness?
4. When during these employee recovery processes do these psychological reactions to injury and illnesses emerge?
5. Informed by research, what practical processes can be implemented to enhance positive outcomes for employees recovering from illness and injury?
6. Based on the interviews with some of Safe Work Australia's stakeholder groups and the grey literature search, what are the best practice recommendations and examples to support workers and minimise the risk and impact of negative psychological responses to work-related injuries or illnesses?

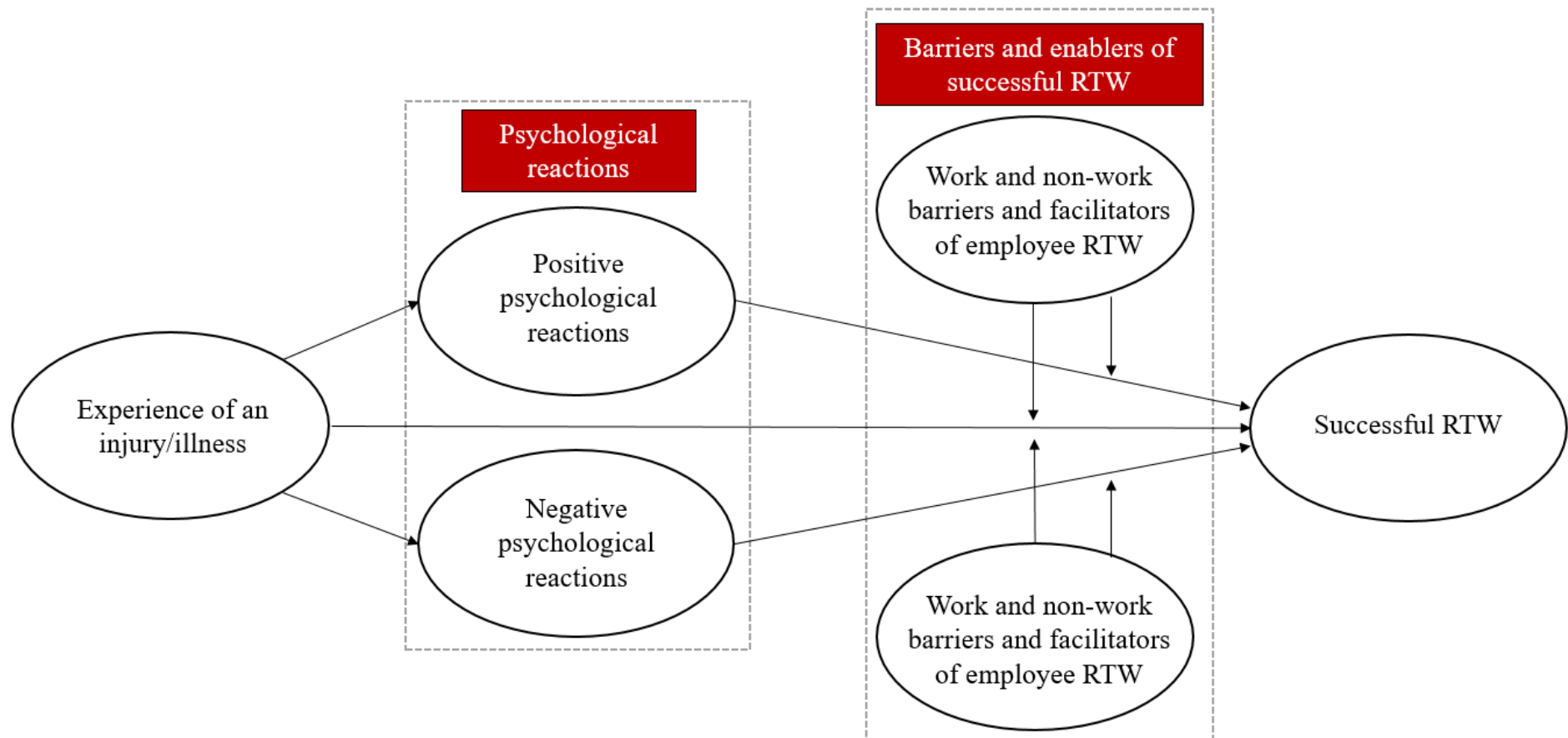


Figure 1. Conceptual framework of employee psychological responses to injury/illness and RTW processes.

2.0 Research Methodology

This section provides a detailed overview of the research methodology that was undertaken by the project team, incorporating two systematic reviews and interviews with RTW stakeholders. This project was commissioned by Safe Work Australia and conducted by a team of experts from the School of Applied Psychology at Griffith University, led by Professor Paula Brough. The project was conducted from October 2020 to April 2021, and this report summarises the project's procedures and findings.

To improve our understanding of the complex multifaceted RTW processes, a mixed methods approach combining both qualitative and quantitative paradigms was adopted. We conducted and combined assessments of both qualitative elements (i.e., interviews conducted with key RTW stakeholders, and thematic analysis of the RTW literature), with a quantitative analysis (i.e., data obtained via systematic literature review), to answer the key project questions and produce recommendations.

The literature search methodology was informed by previously validated systematic review processes (Pickering & Byrne, 2014), and is summarised in Figure 2 below. Literature for this systematic review was sourced using scientific and academic research databases, specifically PubMed and Scopus. To capture a wide range of scholarly literature (i.e., peer reviewed academic journal articles, book chapters, reports, and unpublished dissertations) on the potential psychological reactions to employee RTW processes, the search terms included "return to work", "barriers", "facilitators", and "enablers". Results from these searches were limited to items published within the last decade (2010-2021).

A similar systematic review was conducted on the 'grey' literature, consisting of published reports, technical reports, newsletters, government documents, working papers, and conference proceedings. Given the wide variety of sources for the grey literature search, the adopted search terms were more specific, and included "return to work", "barriers", "facilitators", "enablers", "injury", "illness", and "psychological".

Database results using these search terms returned 5,817 items (including 4,207 unique articles). Each of these article titles was screened for retention in further analysis. Inclusion was determined by assessing if each title discussed employee RTW processes or employee psychological reactions to RTW processes (Sample 1, $n = 297$).

Subsequent analysis of these article abstracts from each sample was conducted to determine inclusion/exclusion in further analysis. Articles were retained if their abstract

contained one or more employee psychological reactions as an outcome variable in the study (i.e., a psychological reaction predicted by another variable). This yielded 95 articles related to the psychological reactions exhibited by employees returning to work (note that only reactions were included in this sample (Sample 2, $n = 95$); instances of mental health/psychological injury were not nominally included [i.e., workers on leave for anxiety would not be included, however anxiety symptoms developed in reaction to taking sick leave for a physical injury would be included]). Evidence from these 95 articles informed the analysis regarding the antecedents and risks factors for employee psychological reactions to injury and illnesses.

Interviews were also conducted with key stakeholder organisations to understand their perspectives of RTW policies, procedures, and experiences with injured workers. In total nine interviews were conducted with relevant employees from these stakeholder organisations. Interview questions focused on discussing the psychological factors in response to injury, return to work policies and procedures, risk factors of experiencing negative psychological responses to injury, and opportunities to identify and support workers who are at risk of negative psychological responses to injury. The aims of the interviews were to compliment the research findings with practical findings, as well as identifying additional RTW barriers and facilitators not captured by the systematic literature search. Interview responses were analysed using thematic analysis (Braun & Clarke, 2006) to identify and report the various codes and overarching themes within the qualitative data.

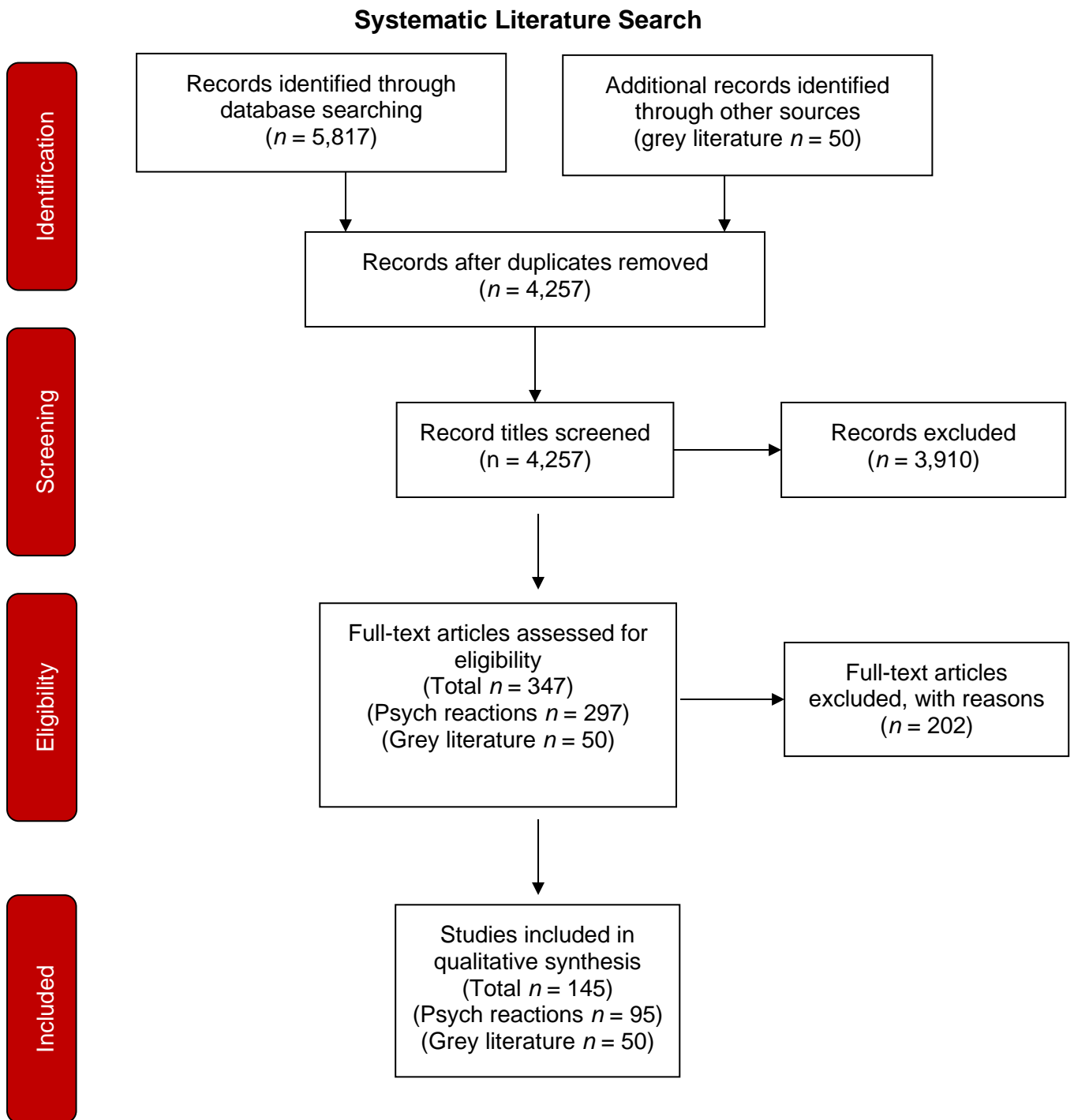


Figure 2. From the initial list of 5,867 academic journal articles, book chapters, organisational reports, technical reports, and unpublished dissertations, 347 were reviewed at the abstract level, and 145 works were retained across all analysis.

3.0 Psychological Reactions to Injury/Illness

Section Aims:

What are the specific psychological reactions experienced by employees and how do these influence RTW outcomes?

Following an injury or illness resulting in workplace absence, employees may exhibit a range of psychological reactions. These include reactions related to poor RTW outcomes, such as **clinical symptoms** (i.e., depressive symptoms, anxious symptoms), **emotional distress**, **fear-avoidant beliefs**, and **increased stress**. Other psychological reactions can *enhance* RTW outcomes, including **increased confidence** (i.e., increased RTW self-efficacy, RTW expectations, and optimism), high **social support** (i.e., support from colleagues, supervisors, and other organisational members/systems), and a sense of **empowerment regarding control over RTW processes**.

What are the specific antecedents that place employees at risk of these psychological reactions?

Multiple features of the individual and organisation were found to precede the development of these psychological reactions. Although these differed between specific psychological reactions, common features included the **severity of the initial injury or illness** which was frequently associated with worse psychological reactions. In contrast, the provision of **social support**, low levels of **work stress**, and **RTW interventions** were related to more positive psychological reactions reported by injured employees.

This section presents the findings from the analysis conducted to explore the psychological reactions exhibited by employees following an injury, illness, and their subsequent RTW. First, the general trends observed in the research literature related to employee psychological reactions to injury and illnesses are summarised. Then, the specific psychological reactions which previous research has shown to hinder and/or enable RTW outcomes are discussed.

As noted, evidence regarding the psychological aspects of employee recovery from injuries and illnesses has recently increased, and this growth trend is summarised in

Figure 3. There has been a recent marked increase in published studies investigating employee psychological reactions or mental health during their occupational rehabilitation (often in addition to physical and occupational outcomes). These findings are aligned with similar trends in the broader occupational psychology literature, whereby employee wellbeing and psychological safety have also experienced a growth in recent published research (rather than a strict focus on staff performance and motivational outcomes).

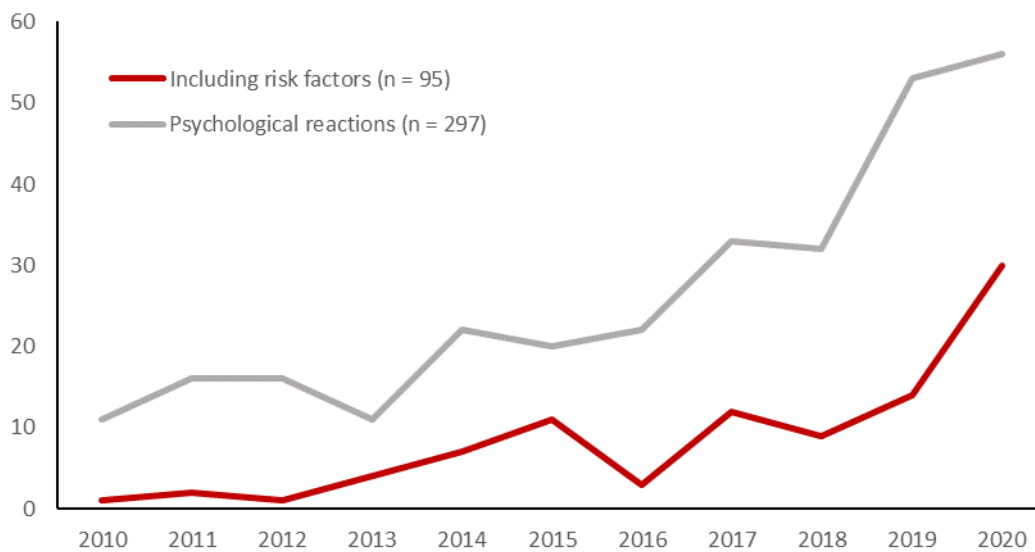


Figure 3. Frequency of research exploring employee psychological reactions to the RTW process.

To better understand the types of injuries and illnesses explored within this literature, the specific described injury or illness were coded, and these results are summarised in Figure 4. Studies that included multiple injury/illness types (i.e., various types) was the most common, followed by research describing common mental health issues, musculoskeletal conditions, and traumatic brain injuries. Similar results were found for the subsample of studies which included the potential antecedents and risk factors of employees' psychological reactions to injury and illness (shown in red; $n = 95$). For this subsample, articles which combined various injuries and illnesses were the most common, followed by musculoskeletal pain and injury, and then research that investigated both musculoskeletal symptoms in addition to common mental health issues.

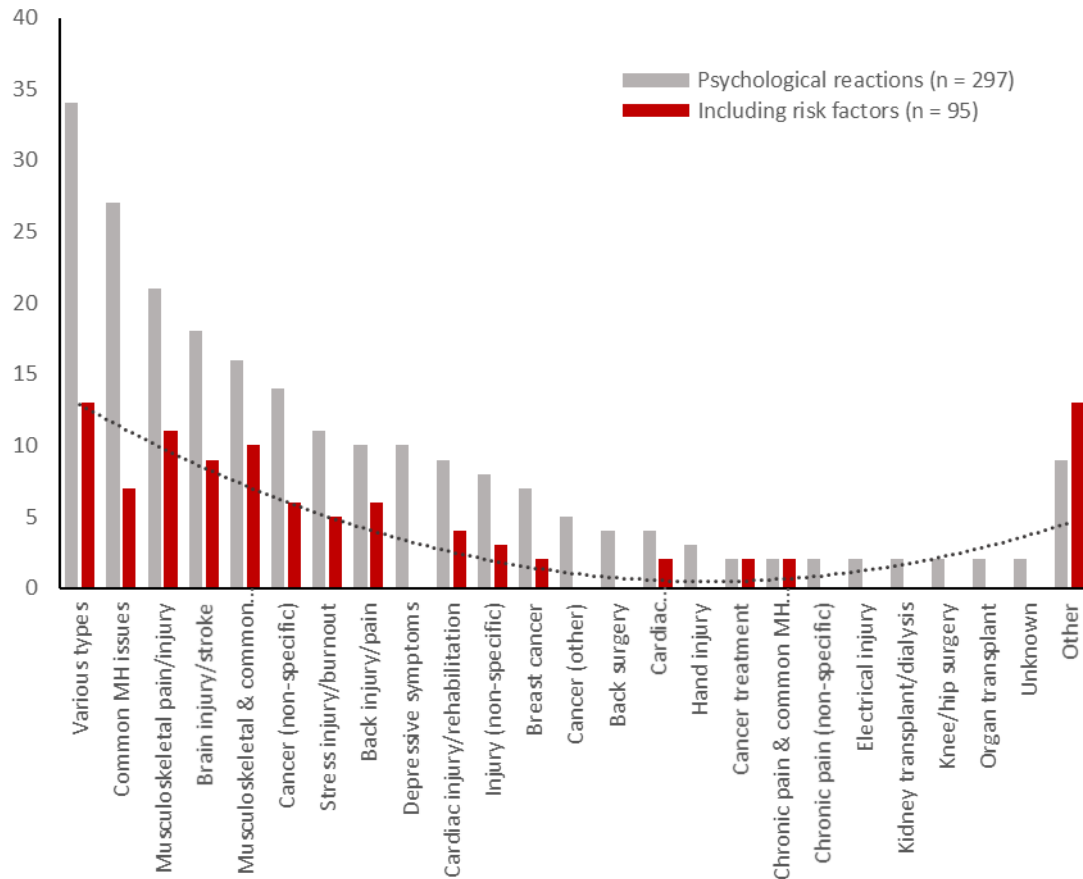


Figure 4. Frequency of specific types of injury/illness explored in the literature, comparing both title and abstract searches.

Interestingly, some minor differences are apparent in the comparison of these two samples illustrated in Figure 4. The articles which included psychological reactions appear to less frequently focus on mental health injuries and illness (i.e., common mental health issues $n = 7$ and depressive symptoms $n = 0$; compared to $n = 27$ and $n = 10$ respectively). These differences likely occur due to the difficulties in delineating between primary effects (the reason employees are absent) and secondary effects (effects that emerge due to the primary injury/illness).

To explore this issue further, an analysis was conducted by aggregating the samples across these 297 scientific articles. These articles included a combined total sample of 488,137 participants. Figure 5 highlights the specific injuries and illnesses reported by these participants. Again, multiple injuries and illnesses, and musculoskeletal pain were reported by the majority (69%) of the participants within these studies (totalling over 336,000 participants). Whereas, reports of negative mental health outcomes and depressive symptoms only accounted for 10% within this sample. This finding highlights the general tendency within this published research to focus on physically based injury outcomes, rather than assess mental health injury and illnesses. This

physical health focus is influenced by the use of large-scale population-based studies which commonly access hospital or insurance data specific to musculoskeletal injuries or unspecified injuries and illnesses.

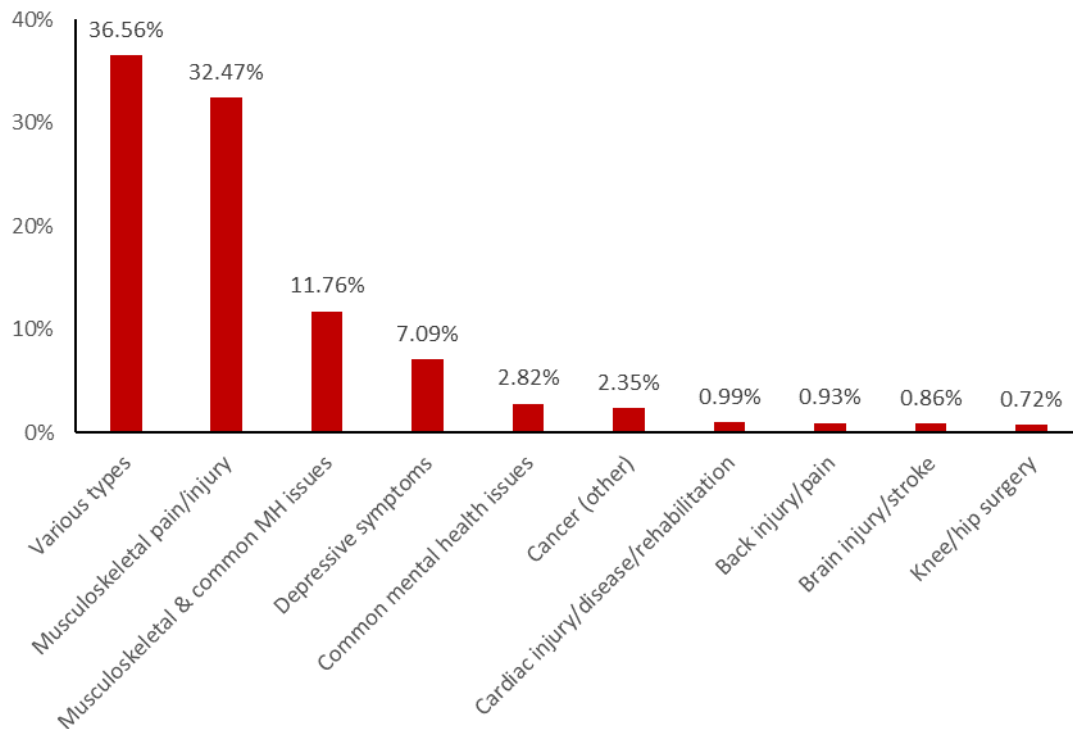


Figure 5. Proportion of participants examined by injury/illness type.

3.1 Psychological reactions which hinder RTW

To assess the specific psychological reactions reported by employees during their recovery and RTW processes, we coded these reactions described within the scientific articles. The most common psychological reactions reported to hinder successful RTW processes are summarised in Figure 6. The most frequently examined psychological reaction within this published literature is depressive symptoms ($n = 34$ of articles), followed by emotional distress, anxiety symptoms, fatigue, and fear-avoidant cognitions. These results describe highly related psychological conditions (anxiety, fear-avoidance, and worry). These psychological conditions in combination, account for the most frequent type of psychological hindrance.

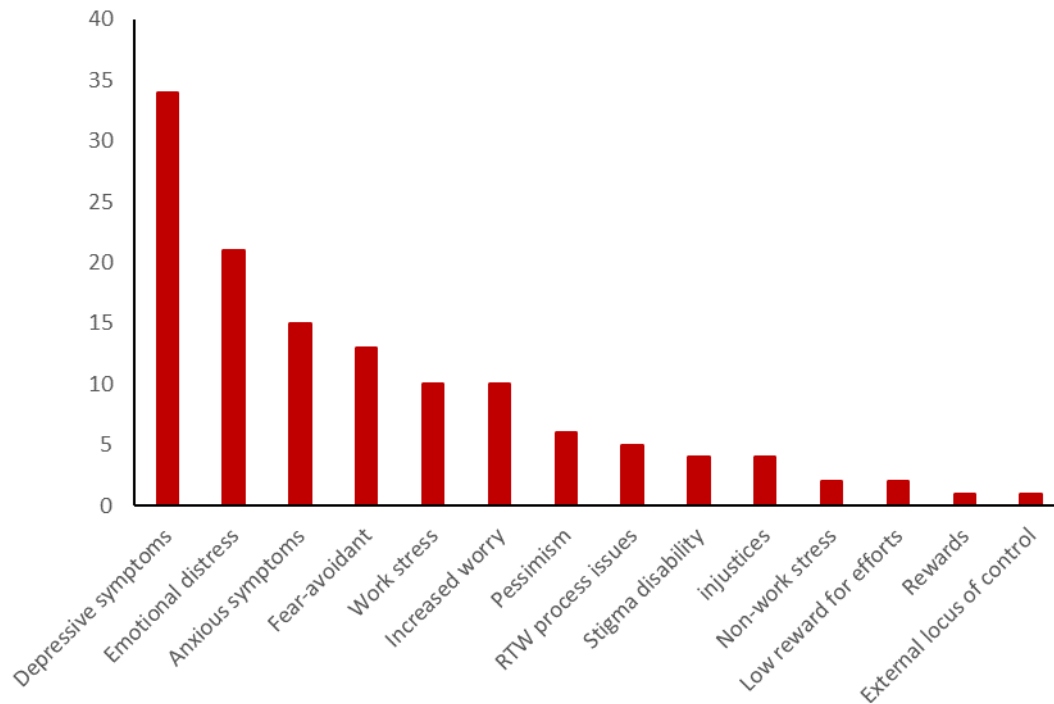


Figure 6. Frequency of psychological reactions investigated which hinder RTW outcomes.

The five most frequently investigated psychological hindrances to successful RTW are described here:

- Depressive symptoms:** Across these studies, depression and depressive symptoms were the most frequently investigated psychological reaction to injury and illness affecting an employee's capacity to work. Of articles exploring employee psychological reactions, 28% included at least one measure capturing depressive symptoms. The results assessing the impact of depressive symptoms on RTW outcomes were generally mixed. For example, for employees experiencing time off work due to coronary heart disease or myocardial infarction, early ratings of depressive symptoms (i.e., within 3 months of injury) were negatively related to employee RTW (at 12-month follow-up; Cauter et al., 2019; DeJonge et al., 2014), as were depressive symptoms rated by employees undergoing rehabilitation for specific brain injuries and following kidney transplantation (Jordakieva et al., 2020; Turi et al., 2019). Other specific injury types (i.e., traumatic hand injuries) showed no statistical association between depression and physical improvements (Tezel & Can, 2020). Al Yassin and colleagues (2017) found in their sample of employees with traumatic brain injuries, less than 14% of patients who developed depression or anxiety returned to work after six months. Despite these injury specific effects, depressive reactions to injury and illness were amongst the most hindering psychological reactions exhibited, with Thompson and colleagues demonstrating that *“people with depressive symptoms were 3.5 times less likely to have returned to work”* (2014, p. 1). Other systematic reviews have identified a

clear relationship between depressive symptoms experienced after a stroke with an increase likelihood of long-term disability (Blöchl et al., 2019).

- **Emotional distress:** Emotional distress refers to a generalised negative emotionality associated with employee injury and sickness during RTW processes. Often emotional distress is used to capture non-specific mental illness or when multiple measures of mental health are employed. For example, Chen and colleagues (2020) operationalised emotional distress through a combination of both anxiety and depression, revealing these conditions resulted in reduced chance of RTW following a cancer diagnosis. Baseline emotional distress has been related to a delayed RTW, even when controlling for elements of physical capacity to work (Hensing et al., 2013). Utilising a sample of cancer patients, emotional distress was associated with poorer RTW outcomes at both 12- and 24-month follow-ups (Bakker et al., 2019). Interestingly, Gomez-Molinero and Guil (2020) reported that improving emotional distress experienced by cancer patients resulted in their increased perceptions of workability and capacity.
- **Anxious symptoms:** Anxious reactions to workplace absence was a commonly explored psychological reaction within the included research, assessed by approximately 15% of these studies. Anxiety was frequently related to poorer RTW outcomes. Studies investigating traumatic brain injuries for example, highlighted different rates of anxiety in workers who successfully returned to work (prevalence rate of 9%), compared to those who failed to return (prevalence rate of 22%; van der Horn et al., 2013). Similar results were also reported for employees with both blood and bone cancer (Horsboel et al., 2015). Interestingly, a negative association was found for the severity of injury; such that employees with *more* severe brain injuries reported *less* anxious symptoms, as compared to less injured participants (van der Horn et al., 2013). Comparable findings were also produced for employee absence due to electrical burns, such that low voltage burns victims exhibited increased anxiety, as compared to high-voltage injuries (Radulovic et al., 2019). It was suggested such findings occurred due to differing levels of expectations regarding RTW, with employees who suffered severe injuries experiencing lower expectations (and less anxiety) regarding their probability of RTW.
- **Fear-avoidance:** Fear-avoidant beliefs have been consistently associated with a reduced RTW. In the current sample, these beliefs were commonly experienced by employees suffering from musculoskeletal injuries, whereby the individual learns to fear the pain associated with movement/activity and thus acts (or rather avoids actions) to reduce their pain (Øyeflaten et al., 2016). Such outcomes prompted Waddell and colleagues (1993) to claim the *“fear of pain and what we do about pain may be more*

disabling than pain itself" (p. 164). Studies have shown fear-avoidant beliefs can directly hinder RTW outcomes (Holden et al., 2010). However, other evidence indicates that after controlling for physical health, no effects of fear-avoidance on RTW outcomes were observed (Watt et al., 2015). To explain this differing viewpoint, Øyeflaten and colleagues (2016) proposed a process by which employees with musculoskeletal injuries reported reduced physical functioning when experiencing heightened fear-avoidance beliefs, which in turn, lead to poorer subsequent RTW.

- **Work stress:** Levels of stress and strain experienced by injured employees have been identified as a clear barrier to successful and timely RTW outcomes. Specifically, high job demands (Corbière et al., 2017; De Vries et al., 2018; Figueredo et al., 2020) or high strain psychosocial environments (Söderberg et al., 2015) have each been linked to low RTW outcomes. Interventions designed to reduce workplace stress through the elimination of perceived stressors (or through increased social support or job control) have demonstrated success during the process of employee recovery (Pijpker et al., 2020). Other reviews have demonstrated that interventions which advocate for contact between the absent employee and the workplace, interventions implementing graded return procedures, and interventions that target perceived stressors (compared to mental health issues) were found to be effective rehabilitative tools (Mikkelsen & Rosholm, 2018).

3.2 Psychological reactions that enable RTW

In addition to identifying the psychological processes that limit an employee's ability to RTW following an injury or illness, an analysis was also conducted to identify the **positive reactions** which support an employee's RTW. Presented in Figure 7 are the 15 most common psychological reactions described by the literature which have been demonstrated to enhance employee RTW outcomes.

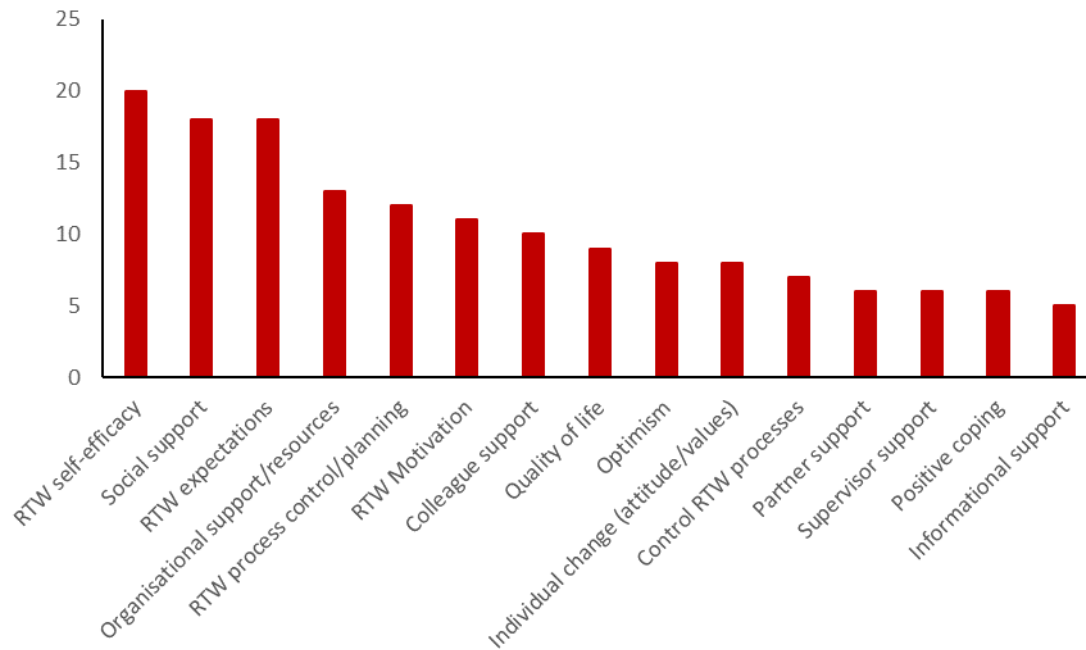


Figure 7. Frequency of psychological reactions investigated which enhance employee RTW outcomes.

An employee's RTW self-efficacy is the most commonly cited psychological reaction to enhance RTW outcomes. This is followed by received social support, employee's expectations regarding their likelihood of returning to work, perceived levels of support provided by the organisation, and control over the RTW processes. The analyses here differentiated between multiple support outcomes (i.e., social support, organisational support, and colleague support), but if combined social support provisions would represent the most common psychological reaction encouraging the RTW. The five most commonly investigated beneficial psychological reactions are described in more detail here:

- RTW self-efficacy:** RTW self-efficacy refers to the workers beliefs and confidence regarding their ability to overcome obstacles and successfully RTW (Gagnano et al., 2020). RTW self-efficacy was the most commonly investigated psychological reaction demonstrated to enhance RTW outcomes. Research measuring RTW self-efficacy has consistently demonstrated positive effects on workers' early occupational return (Black et al., 2018; Corbiere et al., 2017), although differential effects have been reported for specific injury types. For example, self-efficacy related to managing occupational demands were more predictive of early RTW in employees with musculoskeletal injuries. While self-efficacy for managing relationships with supervisors showed a stronger effect in predicting RTW for employees recovering from mental health injuries (Corbiere et al., 2017). Additionally, research assessing RTW self-efficacy has shown temporal-specific effects, such that early experiences of self-efficacy (4-6 months post

injury) were predictive of subsequent RTW at follow-up. However, levels of self-efficacy reported later (at 12 months and 18 months post injury) had a negligible effect over beneficial outcomes across a similar time period (Black et al., 2019). In their study comparing injury and illness types, Brouwer et al. (2010) found RTW self-efficacy was the only predictor related to beneficial RTW outcomes across musculoskeletal injuries, common mental health issues, and other physical injuries. Similarly, Volker et al. (2015) combining multiple injury/illness types found RTW self-efficacy predicted improved RTW outcomes. Almgren et al. (2020) also found RTW self-efficacy was significantly higher in individuals who returned to work (compared to non-returning employees) following a heart transplant. Finally, Richard et al. (2011) also reported that RTW self-efficacy was associated with improved RTW outcomes for employees on leave with back pain.

- **Social support:** Affective psychological reactions, such as feeling supported, were the most commonly cited elements to enhance the RTW identified within this literature. For example, White and colleagues (2019) reported that both supportive reactions to employee injury/illness and social integration during the recovery processes, were two key predictors of successful RTW outcomes. It is apparent that a need for social interactions and social support were major contributors of an employee's intentions and increased motivation to RTW (Svensson et al., 2010). Interestingly, studies assessing support over time indicate that support declined over the initial 6 months after injury, and these reduced levels remained constant at both 12- and 18-month follow-up assessments (Dorland et al., 2018). This suggests that the provision of support may be a temporary factor in the RTW process, although it remains unclear if increased support over these longer time frames would improve employee RTW outcomes. This is an important point to be tested by further research. Finally, Smith and colleagues (2020) advocated for RTW processes which target specific sources of workplace social support, highlighting that across both musculoskeletal and mental health injuries workplace support is critical to successful rehabilitation.
- **RTW expectations:** RTW expectations refers to the employee's beliefs of how difficult and how successful the processes of rehabilitation and work resumption will be (Gagnano et al., 2020). RTW expectations (both at baseline and observed improvements overtime) have been linked to increased work participation, and increased RTW outcomes sustained over time (Aasdahl et al., 2018). Adopting a theory of planned behaviour perspective, Dunstan and colleagues (2013) found RTW expectations accounted for 51% of the differences in work participation in their sample. Similarly, expectations about rehabilitation and recovery were linked to a 50% enhancement in employees' intentions to RTW following a disability pension (Lippke et

al., 2019), and related to employees' perceptions regarding their ability to gain employment following recovery from spinal injuries (Zieger et al., 2011).

- **Organisational support:** Organisational support refers to the perceptions that organisational members and systems are aligned in their aim to support injured employees during their treatment, rehabilitation, and subsequent return to the organisation. Organisational support has been linked to worker overall satisfaction with their RTW processes (Bardgett et al., 2016) and their satisfaction following their return (Figueredo et al., 2020). De Rijk et al. (2019) posited that implementing structured procedures related to improved communications, more collaborations, provision of RTW information, and investing financial resources into RTW systems increased injured employees' perceptions of organisational support and subsequent beneficial recovery outcomes.
- **Control over RTW processes:** One of the key features commonly associated with injury and illness is a loss of control. Thus, providing a sense of control regarding RTW processes can help mitigate negative feelings (Thisted et al., 2018). Regaining control over RTW processes is directly linked to increased RTW ability and self-efficacy (Lork & Holmgren, 2018). Thus, being actively involved with RTW processes and exhibiting responsibility and control over these processes, facilitate a RTW (Ahrberg et al., 2010; Smith et al., 2020).

3.3 Antecedents and risk factors of psychological reaction to injury and illness

The scientific literature exploring the psychological reactions experienced by employees during their RTW, has commonly investigated these outcomes as predictors of successful RTW. For example, if following an injury or illness an employee exhibits symptoms of depression, these symptoms are often shown to produce negative effects and thus delay successful RTW. However, less common but highly pertinent, is research which assesses the **causes, antecedents, or risk factors** that underlie these psychological reactions. To better understand the individual, social, and organisational processes which buffer against (or exacerbate) these psychological reactions, we describe here some of the relevant reviewed research.

From the initial sample of 297 articles, 95 were found to contain information regarding the prediction of employees' psychological reactions to injury and illness. From these articles, 127 unique psychological reactions were extracted and coded and are presented in Figure 8.

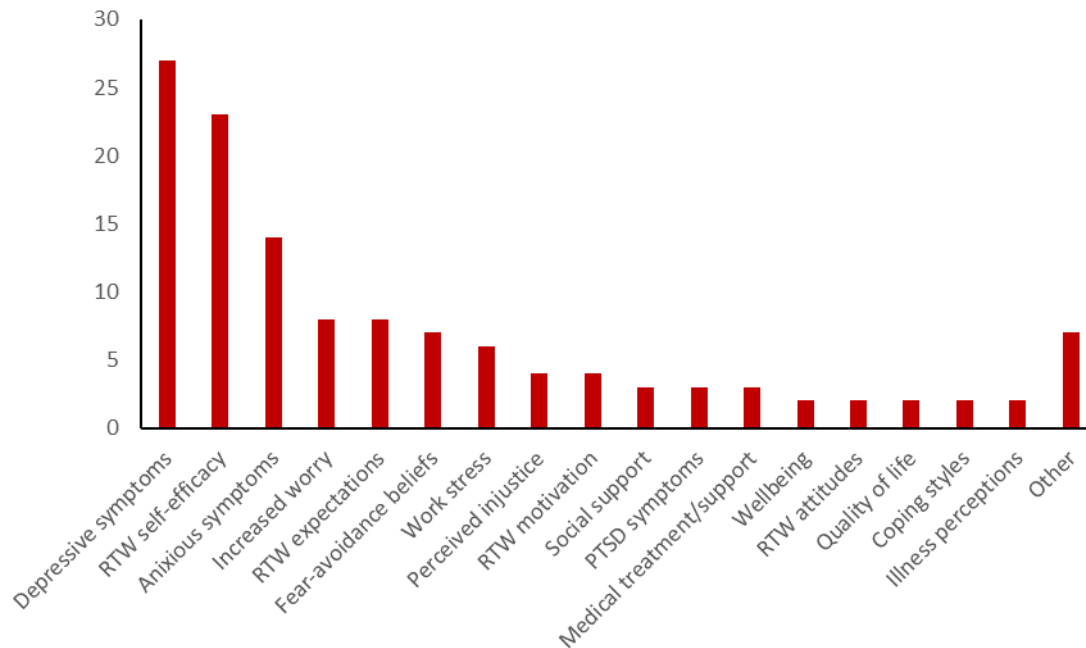


Figure 8. Frequency of psychological outcomes investigated using known antecedents and risk factors of specific psychological reactions.

As is displayed in Figure 8, depressive symptoms, followed by RTW self-efficacy, and anxious symptoms were the most frequently investigated psychological reactions within the reviewed research articles. Less frequently investigated psychological reactions were the antecedents of self-rated wellbeing, attitudes, perceived quality of life, illness perceptions, and coping styles. Other psychological reactions explored by a single article (coded as Other) included: shame at taking sick leave, perceived prejudice, psychological resilience, employee positivity, employee empowerment, attitude change, and emotional repair. We discuss the antecedents of these psychological reactions in more detail below.

3.3.1 Depressive symptoms predictive factors

As depressive symptoms are one of the most commonly investigated psychological reactions to employee injury and illness, it makes sense that the antecedents of depression are also the most frequently investigated. The key variables which relate to predicting levels of depressive symptoms in employees recovering from injuries and illnesses are identified here:

- **Recovery expectations:** Research exploring the relationships between depressive symptoms and RTW expectations have found that more positive expectations regarding employees RTW were associated with reduced

depression outcomes, and subsequent improvements in RTW at 12-month follow-up (Carriere et al., 2015b).

- **Interventions:** Organisational interventions designed to make workplaces more accommodating for employees during cancer treatments, were found to lower both depressive symptoms and fatigue for employees at both 6- and 18-month follow-ups (Taskila et al., 2011). Similarly, Schramm et al. (2020) reported success by tailoring interpersonal therapy programs to target stress-related depression symptoms. Employees experienced more positive ratings on perceived workability, RTW self-efficacy, and more positive effort-to-reward perceptions (Schramm et al., 2020).
- **Responsibility cognitions:** Thompson and colleagues (2014) found that following a road accident, employees who attributed responsibility to themselves (compared to blaming others) were three times less likely to exhibit depressive symptoms.
- **Time:** Time was also consistently found to predict depressive symptoms, such that depression ratings would be lower at follow-up measurement points (Carnide et al., 2016; Dorland et al., 2018; Tezel & Can, 2020). Westerlind and colleagues (2020) for example, found that employees who returned to work following a stroke had fewer depressive symptoms at both 1- and 5-year follow-ups (compared to those who did not return). Assessing a sample of patients with lower back pain, Hampel and colleagues (2019) reported that depressive symptoms were reduced at 6-12 months follow-up for individuals in the highly-depressed group (no significant improvements were found in the low depressive group). Others have tracked the development of depressive symptoms in employees recovering from musculoskeletal injuries, finding that over 50% of employees reported heightened depression at some point over 12 months post injury (Carnide et al., 2016). The authors recommended that *“While symptoms appear to improve over time, the first six months appear to be important in establishing future symptom levels and may represent a window of opportunity for early screening”* (Carnide et al., 2016, p. 204).
- **Gender:** Gender has found to be a significant antecedent in some studies, although we suggest these findings may be confounded by other contextual issues such as caring responsibilities, social pressures, and higher baseline levels of depression in female populations. Both Van der Horn and colleagues (2013) and Clement et al. (2020) reported that female employees had higher

depressive symptoms than males, for both traumatic brain injuries and knee arthroplasty, respectively.

- **Injury/illness severity:** The severity of the injury/illness sustained has been linked to worsened clinical outcomes for employees. Chin et al. (2017) found that the severity of occupational injuries and length of hospitalisation were both related to depressive symptoms at 12-month and 6-year follow-ups. Clement and colleagues (2020) demonstrated that for employees undertaking total knee arthroplasty the presence of additional illnesses (lung disease, neurological diseases, kidney and liver disease, gastric diseases, diabetes, and pain symptoms) increased the likelihood of exhibiting depressive symptoms. Interestingly, some research reports opposing results. For example, Van der Horn and colleagues (2013), demonstrated that employees with minor brain injury exhibited more depressive symptoms than those with more severe injuries. Similarly, Radulovic and colleagues (2019) identified that less severe burns resulted in heightened levels of depressive symptoms (compared to more severe burns). Such findings oppose other research linking the severity of injury and treatment to increased depressive outcomes (Chin et al., 2017; Zanghi et al., 2020), and require further consideration.

3.3.2 RTW self-efficacy predictive factors

Of the positive psychological reactions exhibited by employees following an injury or illness, RTW self-efficacy was the most frequent. Despite this interest, few research studies have specifically focused on factors that might enhance these beliefs regarding the ability to return to active work. Indeed, in their systematic review of the effects of RTW self-efficacy, Black and colleagues argued that *“further empirical research should identify the determinants of self-efficacy, and explore the processes by which higher self-efficacy improves RTW outcomes”* (2018, p. 16). Listed below are the predictors of RTW self-efficacy described by the literature which influence employee psychological reactions to injury and illness.

- **Injury/illness severity:** Rosbjerg and colleagues (2020) demonstrated a negative relationship between RTW self-efficacy and more frequent or intense anxious symptoms exhibited by employees. These authors found RTW self-efficacy increased with reported levels of general, mental, and physical functioning. Other injury specific factors, such as the length of absence and being absent due to psychological injuries (compared to musculoskeletal

injuries), were associated with reduced RTW self-efficacy (Black et al., 2017). Using a cross-sectional sample of (female) employees on leave due to pain and mental health issues, Andersén et al. (2015) found measures of depression explained 46% of the differences in ratings of RTW self-efficacy. Similarly, Brouwer et al. (2010) reported that although RTW self-efficacy was related to improved outcomes across multiple injury types, differences in the strength of these relationships was observed - with employees on leave due to mental health having lower levels of self-efficacy.

- **Perceived work-ability:** Rosbjerg and colleagues (2020) reported strong associations between RTW self-efficacy and mental work ability and general work ability; and a medium relationship association between RTW self-efficacy and physical work ability. Similarly, Nigatu and colleagues (2017) found both RTW self-efficacy and perceived work ability jointly contributed to improved recovery outcomes. Finally, Black et al. (2017b) demonstrated that beliefs regarding work completion were associated with other elements of RTW self-efficacy.
- **Goal setting/autonomy:** Other work has demonstrated how the benefits of maintaining positive goals following rehabilitation (e.g., maintaining an active and fulfilling life) were associated with increased RTW self-efficacy (Lork & Holmgren, 2018). Similarly, low levels of motivation were cross-sectionally related to reduced RTW self-efficacy outcomes (Andersén et al., 2015). Research has also reported how perceptions of job autonomy/control are related to increased RTW self-efficacy, for both musculoskeletal and psychologically injured workers (Black et al., 2017a; Lork & Holmgren, 2018).
- **Baseline self-efficacy:** Research has demonstrated the stability of self-efficacy in regards to RTW. Thus, initial measures of RTW self-efficacy demonstrate a positive relationship with longer term RTW self-efficacy (Andersen et al., 2018). Similarly, Brouwer et al. (2015) explored the changes in RTW self-efficacy overtime, finding that these trends (more than absolute values) were related to improved return to work outcomes. Also, for employees on leave due to common mental health issues both increases in RTW and consistently high levels of self-efficacy were related to a faster RTW (Lagerveld et al., 2017).
- **Interventions:** Andersén and colleagues (2018) tested the effects of some program interventions and reported that multidisciplinary team assessments and multimodal interventions were each related to improved RTW self-efficacy at follow-up (compared to acceptance and commitment therapy or treatment as

usual). Similarly, Corbière and colleagues (2017) utilising a RTW self-efficacy subscale which specifically targeted job demands, reported that job demands were related to positive RTW outcomes for musculoskeletal injured employees. Interestingly, employees with lower levels of previous education reported finding self-efficacy based RTW interventions the most useful (Nordenmark et al., 2020). This has implications for the use of RTW interventions focused on self-efficacy to be especially relevant to employees/occupations with low formal education levels.

- **Support:** Support during rehabilitation and in relation to medical/insurance processes was shown to result in more positive RTW self-efficacy amongst injured employees (Lork & Holmgren, 2018). Similarly, support teams that included the use of multi-discipline/multi-modal RTW interventions were also effective in developing employee self-efficacy (Andersen et al., 2018). Corbière and colleagues (2017) utilising RTW self-efficacy subscales which specifically targeted supervisor support, found these were related to positive RTW outcomes for employees on leave for common mental health issues. Similarly, Black et al. (2017) scale development research specifically included items targeting the provision of workplace social support beliefs, linking these to other aspects of RTW self-efficacy. Finally, support from RTW coordinator (i.e., low-stress contact) was also reported to be related to increased RTW self-efficacy (Black et al., 2017a).

3.3.3 Anxious symptoms predictive factors

Across research that assessed the antecedents of psychological reactions to employee workplace absence, the factors which influenced the development of anxious symptoms were investigated. However, within the literature a large overlap between anxious and depressive symptoms was observed, such that studies which explored anxiety without including depressive symptoms were quite rare. Below are the extracted elements and factors demonstrated to predict anxious reactions in employees during their recovery and subsequent RTW processes.

- **Interventions:** In a comparison of various intervention effects, Salomonsson et al. (2017) found cognitive behavioural therapy interventions reduced anxious symptoms at 1-year follow-up. In a test of the emergence of anxious symptoms experienced by employee on stress leave and subject to a range of different interventions (cognitive behavioural therapy, RTW interventions, or combined),

Salomonsson et al. (2020) reported no significant differences between the interventions. All the interventions reduced anxiety (although CBT interventions produced weaker effects for the reduction of sick leave).

- **Time:** Time since injury is also reported to influence the occurrence anxiety symptoms, although studies report both increases and decreases in anxiety over time. Tezel and Can (2020) found a positive effect of time, with participants reporting a significant reduction in anxious symptoms 1-year post treatment (for hand injuries). Other research has found that for patients on leave due to haematological malignancy, anxious symptoms *increased* over the initial months following diagnosis (Horsboel et al., 2015). Chin and colleagues (2016) also reported that long-term rates of anxiety experienced by injured worker 6 years following injury had increased (compared to ratings at 6 months post injury).
- **Injury/illness severity:** As with other psychological reactions the severity of injuries/illnesses can directly influence the occurrence of anxious symptoms. For example, Chin and colleagues (2016) demonstrated several features predictive of increased rates of anxiety at long-term follow-up, including injury severity, repeated injury frequency, and if the injuries effected physical appearances (Chin et al., 2017). Others found that compensable injury (compared to non-compensable) were more likely to result in anxious symptoms (Giummarra et al., 2017). Interestingly, some studies found an inverse relationship between injury severity and anxious symptoms. More severe traumatic brain injury (Van der Horn et al., 2013) and more severe electrical burns (Radulovic et al., 2019), were both linked to *fewer* anxious symptoms (although both groups exhibited heightened anxiety; Radulovic et al., 2019). Other research has reported no significant associations between hand injury severity and anxiety (Tezel & Can, 2020).
- **Quality of life:** Using cross-sectional data, Cauter and colleagues (2019) showed participants who reported heightened quality of life also rated their anxious symptoms as lower, and both these factors were related to an improved RTW outcome.

3.3.4 Worry symptoms predictive factors

Worry cognitions refers to a range of negative emotions regarding perceived threats to one's psychological safety and well-being, these include injury concerns, financial worry, and somatic symptoms. Negative cognitions of worry and fear have been shown

to be predictive of work status, and to be predictive of an employee's transition from acute to chronic disability (Watt et al., 2015).

- **Perceived job stress:** Increased workplace stress is consistently linked to a range of negative health outcomes. The presence of heightened workplace demands or having poor psychosocial working conditions is associated with increase worry cognitions amongst employees on leave for acute coronary syndromes (Söderberg et al., 2015). Additionally, employees who reported high effort-reward imbalance exhibited heightened worry cognitions, and had poorer return to work outcomes (Söderberg et al., 2015). Using interviews with RTW stakeholders (i.e., GPs, injured workers, and case managers), Bunzli et al. (2017) reported that perceived sources of (re)injury within the workplace were a persistent cause of worry and fear for employees whilst considering their return to work.
- **Financial concerns:** Across multiple time points (i.e., 6, 12, and 24-month follow-up) financial concerns were an ongoing source of worry and concern for employees on leave due to burns (Wiechman et al., 2018). Interviews with RTW stakeholders, found injured workers would often attempt to weigh the risks of re-injury against the potential (financial) rewards of returning to their workplace (Bunzli et al., 2017).
- **Fear of failure:** Research assessing the antecedents of increased worry has highlighted the negative effects of fears regarding failure in the workplace. For example, employees receiving disability pensions expressed a fear of failure (to return to work), and this in turn was associated with increased worry, reduced motivation, and increased stress (Bokel et al., 2020).
- **Social support:** In their study, Bunzli and colleagues (2017) demonstrated a persistent source of worry for injured employees was a lack of support received from other colleagues, or that they would not be accepted by their organisation due to an increased risk of re-injury. Conversely, Bokel et al. (2020) highlighted that maintaining a need for social connectedness was a key motivating factor to RTW.
- **Positive expectations:** As is to be expected, research has identified a clear negative association between positive expectations and worry cognitions. For example, acknowledging current limitations and having high hopes for a successful RTW are both associated with reduced worry cognitions (Bokel et al., 2020). Other studies have examined reduced perceptions of work ability, finding these are associated with an increase in worrisome thoughts (Momsen

et al., 2016). In an assessment of whiplash patients, a 'knock-on' effect was demonstrated, such that both fear-avoidance and catastrophizing cognitions were associated with reduced RTW expectations, which were in turn, associated with a delayed RTW (Carriere et al., 2015a).

- **Interventions:** Some interventions have reduced employee worry cognitions. For example, metacognitive interventions designed to limit worry and develop more cognitive control have been linked to reduced pain catastrophizing in injured employees (Jacobsen et al., 2020). Utilising a sample of employees on sick leave for neck and back pain, Marchand and colleagues (2015) implemented two interventions (a work-focused intervention and a treatment as usual intervention), both interventions demonstrated beneficial effects for reducing fear and worry. Additionally, these reduced worry cognitions measured after 4 months post-injury were also associated with reduced disability at 12 months follow-up (Marchand et al., 2015).
- **Injury/illness severity:** Watt et al. (2015) reported significant relationships between fear outcomes and both physical and mental health. The authors suggested a reciprocal relationship, whereby fear cognitions hinder recovery from physical injury, resulting in declining mental health. In support of these findings, Aasdahl and colleagues (2019) also reported that lower base-line levels of fear cognitions were related to higher work participation at follow-up. Comparisons of this relationship between injury types found that these results were stronger for employees absent due to psychological issues (Aasdahl et al., 2019). For employees on leave for musculoskeletal issues, a positive relationship was found between worry and perceptions of poor physical health/functioning, these cognitions explained the effects of injury in predicting the frequency of employee leave (Øyeflaten et al., 2016). Finally, in a sample of burns victims, perceived long recovery times were found to be a major source of worry at 6- 12- and 24-month follow-up (Wiechman et al., 2018).

3.3.5 RTW expectations predictive factors

RTW expectations refer to an employee's perception of the likelihood of them successfully returning to work. These expectations are often explored within a theory of planned behaviour framework, whereby an employee's RTW is influenced by their attitudes regarding RTW, their perceived control over these actions, and social norms surrounding the RTW (Dunstan et al., 2013).

- **Injury/illness severity:** The severity of the illness or injury causing employee absence has been linked to self-reported expectations regarding RTW. For example, illness perceptions for employees on leave due to mental health issues were a strong predictor of employee's expectations of successful RTW (Løvvik et al., 2014). Similarly, a multivariate analysis revealed that for workers absent due to cancer, later stage symptoms (i.e., tumour stage III compared to stages I and II) were related to lower RTW expectations (Ullrich et al., 2020), which is to be expected. Whilst Dunstan et al. (2013) found pain ratings, functional limitations, and the severity of initial prognosis were also direct antecedents of employees' RTW expectations.
- **Interventions:** Some interventions have been effective at increasing employees' expectations to RTW following injuries. For example, using an intervention based on an acceptance and commitment therapy framework, Aasdahl et al. (2019) found work expectations improved for 33% of employees. Furthermore, these improved RTW expectations were directly associated with subsequent RTW (Aasdahl et al., 2019). Interventions such as the availability of modified work duties, have improved expectations and confidence in returning to work (Dunstan et al., 2013), and such work modifications are common in practice. For example, Stewart et al. (2012) conducted interviews with back injured workers and found the perceived need for workplace accommodations were directly associated with RTW expectations. Conversely, Ullrich and colleagues (2020) found that a perceived inability to return to the former job role directly *decreased* RTW expectations. Although not formally assessed, the differing results here could be influenced by the type of work conducted (e.g., manual, service, knowledge work), and by the level of the worker (e.g., front line, manager).
- **High stress/role limitations:** The anticipated return to a high stress work role clearly reduces RTW expectations (Løvvik et al., 2014; Ullrich et al., 2020). For example, the reviewed research describes how employees undertaking prostate cancer treatments and who perceived an inability to return to their previous work role, had reduced RTW expectations. These results were magnified for those employees who had a high risk of stress job (Ullrich et al., 2020). Similar results were identified in a sample of workers with back injuries: their perceived inability to return to their previous job role produced low RTW expectations (Stewart et al., 2012).

- **Social support:** Feeling socially connected (through work) and perceptions of colleague social support are directly associated with improved RTW expectations (Dunstan et al., 2013; Stewart et al., 2012). This relationship between colleague social support and a RTW applies for both mental and physical workplace injuries (Løvvik et al., 2014).

3.3.6 Summary of antecedents to psychological reactions

The reviewed scientific research identified several common factors that predict the development and persistence of employee psychological reactions following a workplace absence due to injury and illness. The severity of the injury or illness is consistently related to the development of these psychological processes. Similarly, organisational supports and processes such as the provision of social support, the perceived levels of stress/demands required by the role, and the use of interventions designed to facilitate a successful RTW, are also related to improved psychological reactions following an injury or illness. However, it is not clear to what extent some of these predictors and risk factors are modifiable, or to what degree these associations can be altered through either organisational or medical processes.

3.4 Summary of psychological reactions

The conducted analysis sought to explore and evaluate the specific psychological reactions exhibited by employees during their work absence and subsequent recovery processes. These psychological reactions can be delineated between improved RTW outcomes (i.e., **enablers**), and factors which **hinder** this process. As expected, the primary psychological reactions reported to hinder employee outcomes include: depressive and anxious symptoms, emotional distress, fear-avoidance, and perceived stress. These symptoms were related to a range of negative RTW outcomes such as delayed return or long-term disability. For example, organisational environments characterised by high stress and employee strain, clearly hinder an employees' quick and effective recovery (Corbière et al., 2017; De Vries et al., 2018; Figueredo et al., 2020). Similarly, Thompson and colleagues (2014) described how employees who developed depressive symptoms following a motor vehicle accident, were 3.5 times less likely to have returned to work after 12 months.

In addition to the psychological reactions shown to mitigate successful RTW outcomes, multiple factors can facilitate an employee's recovery and subsequent return to work.

These reactions were primarily related to an employees' confidence regarding their ability to successfully RTW following an injury (i.e., RTW self-efficacy, optimism, or RTW expectations), the levels of support received (i.e., perceived social support, organisational support, or supervisor and colleague support), motivational aspects, or an increased sense of control over RTW processes. These factors were consistently related to a RTW success, especially over short time frames (i.e., RTW self-efficacy was predictive of successful RTW over six months; Black et al., 2019).

Although less commonly investigated, some research specifically investigated the risk factors and antecedents of these employee psychological reactions to injury and illnesses. For example, risk factors for the development of depressive symptoms included low recovery expectations, increased severity of employee injury and illnesses, or gender (for employees on leave due to total knee arthroplasty or traumatic brain injury). The influence of positive psychological reactions was also apparent. For example, RTW self-efficacy was increased for employees who perceived they had more control over their work roles, felt supported within their workplace, or had less severe symptoms of illness or injury.

4.0 Barriers and Enablers to RTW

Section Aims:

Based on the research what practical processes can be implemented to enhance positive outcomes for employees recovering from illness and injury?

Multiple barriers were found to hinder employee RTW. For example, **injury specific factors** (i.e., severity or length of the injury or treatments required, co-morbidity with other illnesses, increased physical limitations, physical appearance, or a history of previous injury/illness) were found to produce longer delays and more difficulties returning to work. Features found to facilitate a RTW included **age** (with younger workers returning quicker), participation in **RTW interventions**, and **workplace accommodative practices**.

Follow-up analysis assessed the processes that stakeholders can modify to enhance return to work outcomes. For example, organisational processes or initiatives that assist injured employees to build their **RTW motivation** or to adopt more **positive coping techniques regarding returning to work** can facilitate their RTW journey. From an organisational perspective, workplaces can alter employee outcomes through the **provision of support** (i.e., encouraging social, supervisor, and colleague support), **reducing workplace stress** (i.e., through providing additional resources, reducing employee job demands, increasing employee autonomy, or providing light duties/graded RTW options), or simply **maintaining contact** with injured employees during their recovery and RTW. Whilst other medical and RTW support staff can affect beneficial outcomes via **empowering employees'** during their recovery processes (i.e., enhancing employee control and decision making regarding RTW processes or through developing and maintaining a clear RTW plan/strategy) whilst also providing **RTW process support** and identifying potential hazards.

In addition to understanding specific factors which predict psychological reactions exhibited by employees during their RTW processes, an analysis of the literature was also conducted to investigate the perceived barriers and enablers of successful RTW outcomes more broadly. From the initial sample of 4,257 articles, 297 articles were analysed to highlight the key barriers and enablers of employee's successful RTW.

This analysis highlighted several trends regarding the common barriers and enablers explored within the scientific literature. In the following sections these are categorised

as factors *enabling or hindering* employee RTW processes. These factors are assessed by injury/illness type, in order to produce a deeper understanding of how these different processes impact employee's RTW following an absence for specific injuries and illnesses.

4.1 Key Barriers of RTW

A frequency analysis was conducted based on the common barriers found to prevent or hinder employee's RTW cited within the empirical literature (Figure 9). In total, 275 barriers were extracted forming 28 unique categories. Below are the 20 most frequently reported hindrances to successful RTW identified within this literature.

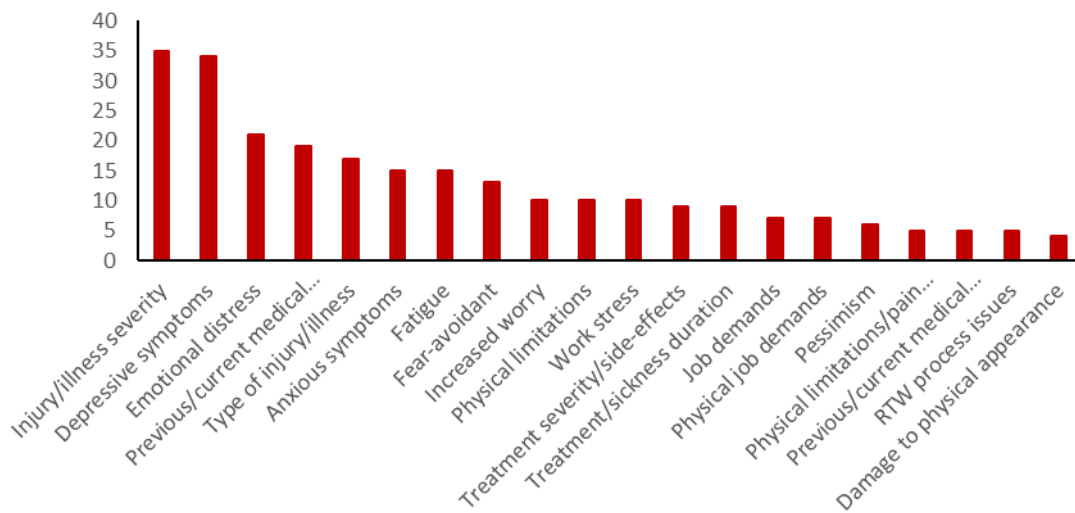


Figure 9. Frequency of RTW barriers extracted from the literature ($n = 297$).

Across these observed barriers both physical outcomes (i.e., injury severity and previous medical conditions) and psychological aspects (i.e., depression or emotional distress) were found to significantly hinder and delay the RTW outcomes. We describe below the top five common barriers associated with an employee's delayed or unsuccessful RTW, following a formal absence.

- Injury/illness severity:** The severity of the injury/illness was the most commonly cited RTW barrier identified within this literature. Unsurprisingly, this was found to have a negative impact on RTW, such that the more severe the injury the longer returning to work was delayed (Zanghi et al., 2020). These effects were consistent across both subjective measures (i.e., self-reported global symptoms scores; Netterstrom et al., 2015; Øyeflaten et al., 2014) and objective measures (i.e., number of herniated discs, length of hospitalisation,

and if surgery was required; Giummarra et al., 2017; Materne et al., 2019; Zieger et al., 2011).

- **Previous or current medical conditions:** A second barrier to a successful RTW was previous sickness, or other simultaneous co-morbid health issues. This included physical health issues (i.e., kidney disease, liver disease, diabetes; Clement et al., 2020; Ruile et al., 2020; Zieger et al., 2011), and mental health issues (i.e., previous mental health diagnosis; de Vries et al., 2018; Zanghi et al., 2020). The frequency of previous sickness episodes was also related to a slower RTW outcomes (Mishima et al., 2020).
- **Type of injury/illness:** Some studies compared multiple types of injuries and illnesses and assessed their effects on RTW outcomes. For example, Øyeflaten and colleagues (2014) demonstrated more positive RTW outcomes for mental health and musculoskeletal diagnoses, compared to heart disease or neurological issues. Psychological stress and burnout was found to cause less absence, as compared with depressive symptoms (Gary & Collie, 2018). Studies exploring rehabilitation following brain injuries, found the specific brain injury type directly impacted the RTW: cerebral infarction injuries produced the shortest average RTW (77 days), compared to workers who had a cerebral haemorrhage or subarachnoid haemorrhage (117 and 206 days respectively; Chen et al., 2019).
- **Fatigue:** The research frequently identified how patient fatigue was directly associated with delays in RTW. For example, in their assessment of burns patients, Wiechman and colleagues (2018) found sleep disturbances were predictive of a negative RTW, after controlling for reduced physical and psychological quality of life. Achieving an unbroken sleep has clear benefits on an effective RTW (Sandmark, 2011). Interestingly, some studies found the direction of these effects inverted between baseline and follow-up. For example, Porro and colleagues (2019) found fatigue at time one was associated with worse RTW outcomes at follow-up. However, fatigue ratings at follow-up were positively associated with work outcomes (i.e., employees who had returned to work were more fatigued compared to those who had not).
- **Physical limitations:** Physical limitations hinder RTW outcomes across a range of injuries and illnesses. Lundh et al. (2014) found that self-reported physical symptoms influenced the rate of absence in employees, even after controlling for other prognostic features. In cancer patients, both baseline

physical functioning and improvements in physical ability were directly related to improved RTW (Chen et al., 2018).

4.2 Enablers of RTW

A similar process was utilised to explore the potential *enablers* of RTW, within this literature. Figure 10 below displays the 30 most frequently cited enhancers of an employee's successful RTW.

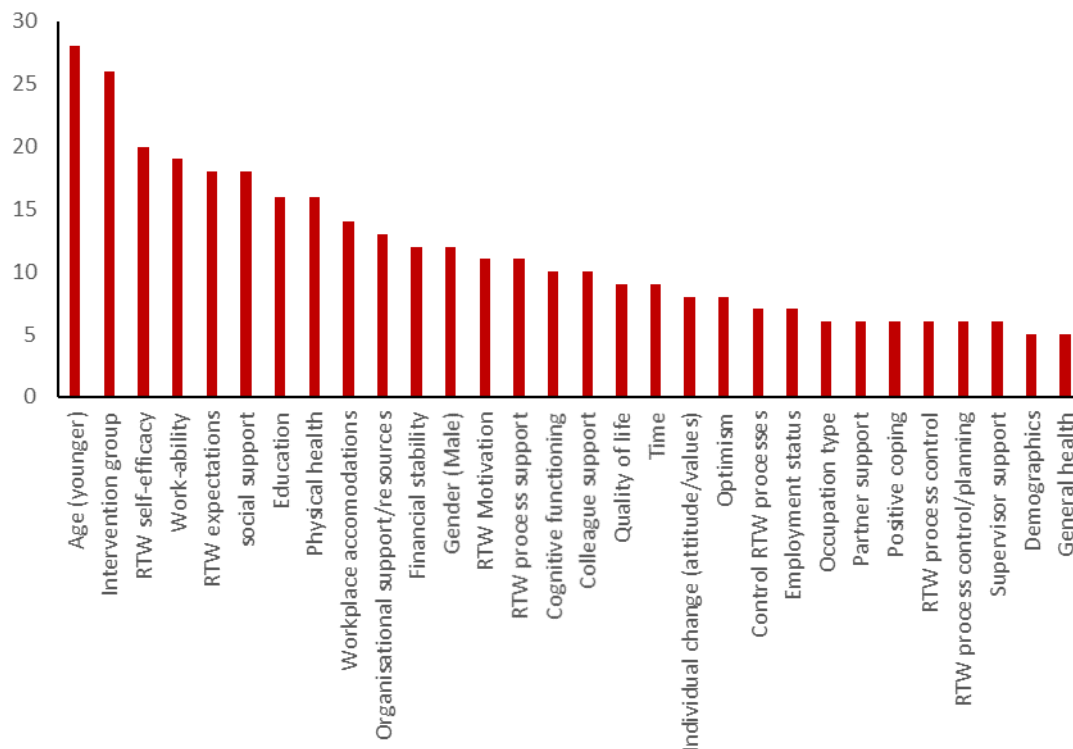


Figure 10. Frequency of RTW Enhancers extracted from the literature ($n = 297$).

Of the common enhancers identified, participant age was the most frequently cited (with most cases demonstrating a negative relationship between age and successful RTW outcomes). The second most common enabler was assignment to an intervention group, followed by RTW self-efficacy, perceived workability, and perceived social support. We describe these common enhancers of successful RTW below:

- **Employee age:** Age has been frequently associated with improved RTW outcomes across both mental health (Behrens-Wittenberg & Wedegaertner, 2020) and musculoskeletal disorders (Etuknwa et al., 2019). In longitudinal studies age has been associated with both increased intentions/motivations to RTW, but also increases in motivation over time (Lippke et al., 2019). Younger age was linked to increased negative psychological reactions following spinal

injuries (Anderson et al., 2015) and an increased retention and RTW (Etuknwa et al., 2019). Thus, younger employees are generally more adaptable to health issues, and less likely to incur secondary complications which hinder recovery processes (Chu et al., 2019). Turi and colleagues (2019) reported that proximity to retirement age was the underlying causal mechanism for these observed effects. Interestingly, due to the use of statistical logistic regression techniques, age is usually coded using arbitrary cut-offs (i.e., 38 years old by Behrens-Wittenberg & Wedegaertner, 2020; 50 years old by Anderson et al., 2015; and 60 years old by Chu et al., 2019). This arbitrary coding of age hinders any interpretation of potential non-linear effects, and requires further detailed assessment.

- **Intervention group:** A number of interventions have enhanced RTW outcomes in employees absent on sick leave. In their systematic review, Axen and colleagues (2020) reported that work-focused cognitive behavioural therapy and problem-solving skill interventions were both effective at reducing initial work absence for employees with common mental health disorders. Other research reports similar results using psychological interventions, albeit with small effect sizes (Salomonsson et al., 2018). It is important to recognise that these interventions may also have delayed effects. For example, an inpatient rehabilitation for musculoskeletal and mental health injuries showed no effects at initial follow-up, but significantly improved sustained RTW after 12 months (Gismervik et al., 2020). Dorland and colleagues (2018) recommended that for employees experiencing cancer rehabilitation, workplace interventions should aim to reduce fatigue, depressive symptoms, cognitive symptoms, whilst encouraging supervisor social support.
- **Perceived workability:** Workability refers to an individual's capacity to successfully complete their work, with respect to both the work demands and their health status/mental resources (Hensing et al., 2013). Employees with a low self-reported workability can be up to twice as likely to delay their RTW (compared to high workability groups; Hensing et al., 2013). This is especially true in work environments characterised by high job demands (Nigatu et al., 2017). For workers with cardiac illnesses, employment history and workability explained 62% in their RTW outcomes (Thomson et al., 2019). Low workability is also related to increased somatic symptoms for employees with back pain (Momsen et al., 2014). Victor and colleagues (2018) suggested workability could be employed as an early assessment of delayed/issues with returning to work. This recommendation is supported by research demonstrating that low

workability was predictive of non-RTW at both 12-month and 3-year follow-up (Netterstrom et al., 2015).

- **Employee education:** Higher levels of formal education are consistently related to better RTW outcomes. However, the mechanisms through which education benefits rehabilitation processes are not completely clear. Education levels may be a proximal indicator of a professional job role, thus requiring less physical exertion. For example, in Etuknwa and colleagues' (2019) systematic review, they examined six studies where a significant effect of education was found. Five of these studies including samples of employees on leave from work due to musculoskeletal injuries. Similarly, Vindholmen and colleagues (2014) stratified their sample based on levels of education and reported that education produced different results for their RTW intervention program.
- **Perceived physical health:** As it to be expected, physical health is a common predictor utilised in the RTW literature. Interventions focused on improving physical health characteristics are commonly positively related with an improved RTW following injury and illness (compared to treatment as usual; Gismervik et al., 2020). Interestingly, studies comparing both subjective and objective measures of physical health/activity generally report a greater success for the use of objective measures (Rinn et al., 2020).

4.3 Barriers and Enablers per Injury and Illness

In addition to the analyses of the enablers and barriers to successful RTW outcomes, we conducted a further analysis to assess if specific injury/illness types produced different patterns of barriers and enablers. Below is the frequency of academic publications which investigated RTW barriers and enablers for specific injury types (Table 1). These include studies combining various injuries and illnesses, those investigating musculoskeletal injury/pain, common mental health issues, employees on leave due to cancer, and those targeting employee traumatic brain injury and/or stroke.

When differences between barriers and enablers are examined by specific injury and illness types some interesting findings emerge. Specifically, more diversity is observed between the *enablers* of specific injury types, compared to the *barriers* which hinder the successful RTW. The barriers which prevent successful rehabilitation outcomes are generally similar between the injury types. These barriers can be categorised as mental health difficulties, physical limitations/demands, RTW process problems, and issues regarding the type and severity of the injury/illness incurred. In contrast, more diversity

was observed for the enablers of specific injury/illness types, including: personal demographics (i.e., education, gender, age), the presence of positive expectations regarding return, RTW (i.e., self-efficacy), the provision of various sources of support (i.e., organisational, family, and social), perceived ability/physical health, cognitive functioning (especially for brain related injury), acceptance of changes, and positive RTW process outcomes (i.e., support, control, and regular contact with the organisation/stakeholders).

Table 1. Frequency of barriers and enhancers of successful RTW reported in studies per injury/illness type

Barriers		Enhancers	
	<i>n</i>		<i>n</i>
<i>Multiple injuries and illnesses</i>			
Type of injury/illness	9	Social support	11
Emotional distress	6	RTW expectations	6
Fatigue	6	RTW self-efficacy	5
Injury/illness severity	5	Age (younger)	4
Fear-avoidant	4	Education	4
Work stress	3	Organisational support/resources	4
<i>Musculoskeletal pain/injury</i>			
Perceived injustice	4	RTW expectations	8
Fear-avoidant	3	RTW process control/planning	2
Physical limitations	3	Age (younger)	1
Physical job demands	2	Colleague support	1
Previous/current medical conditions	2	Gender (male)	1
Depressive symptoms	2	Intervention group	1
<i>Common mental health issues</i>			
Previous/current medical conditions	6	Age (younger)	5
Injury/illness severity	4	Intervention group	5
Work stress	4	Workability	5
Type of injury/illness	2	Occupational type	3
Anxious symptoms	2	RTW expectations	3
Depressive symptoms	2	RTW process control	3
<i>Cancer injuries</i>			
Depressive symptoms	4	Organisational support/resources	6
Job demands	4	Contact with organisation	4
Injury/illness severity	3	Time	4
Treatment severity/side-effects	3	Workplace accommodations	4
Fatigue	3	Physical health	3
Anxious symptoms	3	Colleague support	2
<i>Traumatic brain injury</i>			
Depressive symptoms	9	Cognitive functioning	5
Injury/illness severity	8	Individual change (attitude/values)	3
Anxious symptoms	7	Control RTW processes	2
RTW process issues	3	Education	2
Type of injury/illness	2	Family support	2
Fear-avoidant	2	Gender (male)	2

4.4 Modifiable Risk Factors

Following the analysis of the barriers and enablers of employee RTW outcomes, many of the elements identified within this literature were found to be stable factors of either the injury/illness or of the individual. For example, employee injury/illness severity, depressive symptoms, emotional distress, and existing medical conditions were amongst the most consistent barriers for a successful RTW. While younger age, RTW self-efficacy, and perceived workability were the most frequently observed enablers of successful RTW following an injury or illness. Although useful to facilitate accurate prognosis regarding employee leave, several of these elements are stable features of the individual or injury (whilst others are difficult to modify through interventions).

Therefore, the previous analysis was repeated, however targeting the specific modifiable factors which relate to beneficial RTW outcomes. Delineating between modifiable and non-modifiable factors can be useful to determine employees who remain at-risk for delayed or non-RTW, and employees for whom treatment effects will likely enhance their RTW outcomes (Trenaman et al., 2015). The previously identified barriers and enablers for successful RTW were analysed based on their modifiability by individual, organisational, and other stakeholder processes. Figure 11 summarises the results of this specific analysis:

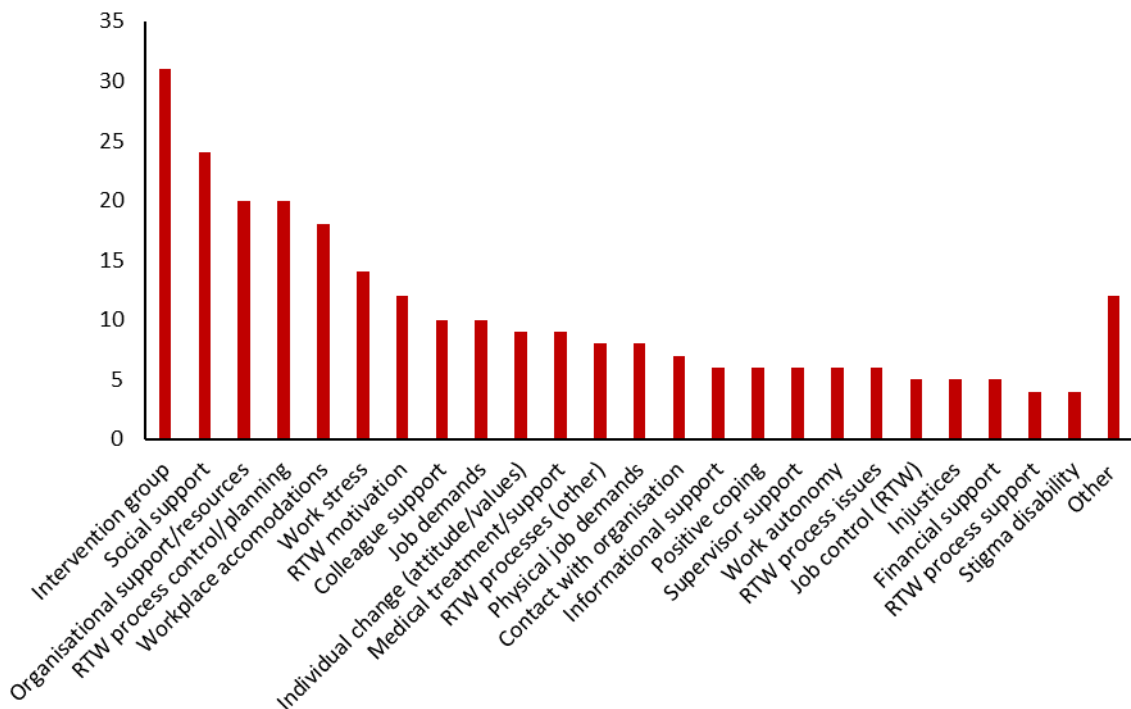


Figure 11. Frequency of modifiable factors which support successful RTW outcomes.

It can be seen from Figure 11 that RTW interventions were the most frequently investigated modifiable predictor of an employee's successful RTW. Other frequent modifiable predictors were: perceived social and organisational support for the returning worker, control over RTW processes, workplace accommodations, and work stress. We considered these results in the context of who exhibits ownership/control over these processes (i.e., the individual, the organisation, or other RTW stakeholders) and we describe these findings below:

4.4.1 Individual level factors

The individual-level factors which can be modified by the focal employee for successful RTW, usually with the help of their co-workers or supervisors, include the focal employee's RTW motivation, which is an internal motivational process exhibited by the injured employee. Also, colleague support was identified, and this refers to the support and acceptance provided by other individuals usually within the same team or work unit. The modification of these outcomes may be constrained by broader organisational factors (e.g., organisational culture), but evidence for the occurrence of these individual-level factors was clear. The modifiable individual-level factors commonly consist of individual-level behavioural or cognitive processes:

- **RTW motivation:** The most commonly extracted individual level process in these analyses was employees RTW motivation. Across these studies aspects of RTW motivation were related to individual processes such as career ambition (Fiabane et al., 2015), individual desires and vanity (Ahrberg et al., 2010), motivational efforts (Ruile et al., 2020), and the motivation to pursue an active/fulfilling life (Lork & Holmgren, 2018). These motivational factors were subsequently related to beneficial RTW outcomes (Carlsson et al., 2019; Kessemeier et al., 2017). Other key findings here include: general internal motivation (Thisted et al., 2018), motivation through optimism outlooks (Lundberg et al., 2019), or simply wishing to not be seen as "sick" (Tiedtke et al., 2012).
- **Colleague support:** Individual processes such as receiving support from colleagues was also frequently linked to better recovery outcomes. For example, receiving supportive reactions or gratitude for returning (Beaulieu, 2019; Mukai & Morioka, 2020), providing assistance, and supporting employee adjustments to their return were found to be beneficial (Bottcher et al., 2012; Dunstan et al., 2013; Goorts et al., 2020). Conversely, injured/sick employees who expected colleagues to exhibit doubts or non-acceptance upon return, were identified as a barrier to a successful RTW (Tiedtke et al., 2012).

- **Individual change (attitudes/values):** Another factor found to increase successful RTW outcomes was attitudinal change within the absent employee. Attitudinal change was commonly assessed via self-acceptance, self-belief, loss of former self, returning to a new normal (Soeker, 2016; Soeker, 2012), changes in understandings of health (Esteban et al., 2018), accepting changes in work and personal values (Bostjancic et al., 2014), and developing new appreciation of life (Barnard et al., 2016). Similarly, attitudinal outcomes such as employees' readiness to change (Hellstrom et al., 2018) and support for personal change processes (Ahrberg et al., 2010) were each related to improved RTW outcomes.
- **Positive coping:** One mechanism found to increase successful RTW outcomes was the use of effective coping styles by the injured employee, which can be achieved if employees are given the time and resources to access evidence-based stress management training (Biggs & Brough, 2015). For employees diagnosed with schizoaffective disorders for example, learning to effectively cope and manage their symptoms (i.e., adherence to treatment) was a critical factor for their return to employment (Soeker et al., 2019). De Vries and colleagues (2014) used a cluster analysis to determine qualities which resulted in delayed RTW. They reported that personality characteristics and coping behaviours (i.e., low self-confidence, feeling inferior/insecure, feeling ashamed, difficulty indicating needs, or inability to discuss functioning) each delayed the RTW. Similarly, Øyeflaten and colleagues (2014a) found that negative coping behaviours increased the likelihood of receiving a sick pension. Finally, van Muijen et al. (2019) reported that active coping mechanisms significantly mediated negative outcomes (i.e., depressive symptoms, cognitive limitations, fatigue, and physical limitations), to produce higher rates of RTW success.
- **Disability stigma:** Other research acknowledged the perceived stigma of having a disability as a key demotivator of returning to work. For example, interviews with absent workers undergoing schizo-affective treatments, found they had fears regarding society's acceptance of their capacity to work and these fears delayed their RTW. Similarly, Netterstrom et al. (2015) reported instances of bullying exacerbated sickness outcomes for individuals on leave due to stress issues. Similar effects of perceived prejudices for employees returning to work following a cancer diagnosis were also found to predict sick leave and work absence (Mukai & Morioka, 2020).

4.4.2 Organisational level factors

Other modifiable features for the RTW are organisational-level factors, which typically interact with the individual-level factors to influence employee RTW. They include the provision of social support to sick/injured employees, organisational contact during recovery processes, and job specific elements such as the demands and support provided to returning employees:

- **Social support:** The provision of social support for employees absent due to sickness and injury was consistently found to be of benefit to recovery and successful RTW. Dunstan et al. (2013) found that the need to re-engage with social aspects of work was related to greater expectations regarding actual return at three months following musculoskeletal injury. Other research reported similar needs for employees on disability pensions (Bökel et al., 2020). The importance of feeling part of a social context and positive workplace social encounters were associated with an increased ability to RTW (Lynoe et al., 2013; Svensson et al., 2010). Following an acute unintentional accident, Clay and colleagues (2012) found both social functioning (at 1-week post injury) and the presence of strong social relationships was associated with improved RTW outcomes. In their sample of cancer survivors, employees who failed to RTW reported a greater need for social support, had fewer positive social interactions, and worse social-emotional functioning (Chen et al., 2019). Pijpker and colleagues (2020) explored the mechanisms through which RTW interventions can improve employee outcomes, they found that interventions which enhance perceptions of workplace social support (in addition to targeting employee decision-making, stress reductions, and job control) were the most effective. For employees returning to work following kidney transplantation, social competence (i.e., seeking and maintaining contacts) was related to improved work outcomes (Grubman-Nowak et al., 2020). Additionally, receiving support was linked to increased RTW self-efficacy and subsequent employment outcomes (Lork & Holmgren, 2018). Internal organisational support was associated with job satisfaction after the actual return to the workplace (Figueroa et al., 2020). White and colleagues' (2019) systematic review found social integration, social functioning, and social barriers were all related to employee return outcomes.
- **Organisational support/resources:** Organisations are a key stakeholder in RTW processes and maintain multiple avenues to affect RTW outcomes. Employees returning from total knee and hip replacement found that the provision of organisational support and role adaptation were key factors which

enhanced their RTW experiences (Bardgett et al., 2016). Interviews revealed a perceived lack of support and guidance from their organisation hindered employee recovery, additionally themes regarding 'troublesome' work situations also reduced motivation to return (De Vries et al., 2014). De Rijk and colleagues (2019) identified a series of processes organisations can implement to assist in RTW for cancer patients. These processes included: maintaining structured procedures, collaboration, communication skills training, provision of information on cancer, and allocation of financial resources. Johanson et al. (2020) implemented an intervention to assist RTW outcome for employees with affective disorders, and found organisational support for the integration of employees and healthcare services was directly related to intervention success and adoption. Organisational encouragement and providing internal support were each related to employee return (Nordgren et al., 2016) and job satisfaction following a RTW (Figueredo et al., 2020). Organisational size has also been linked to beneficial RTW trajectories (Spronken et al., 2020) and to RTW at 2 years post cancer diagnosis (den Bakker et al., 2020). Whilst employees on leave due to burnout reported insufficient organisational support as a key concern hindering their return (Boštjančič et al., 2014).

- **Workplace/role accommodations:** The availability of modified duties was frequently related to employee's intentions and subsequent actual RTW outcomes (Dunstan et al., 2013). Using a sample of employees affected by major depressive disorder, participants rated gradual increases to both the hours and amount of work, as the most important factor supporting their successful RTW (Haraguchi et al., 2015; Mikkelsen & Rosholm, 2018). Whilst others found negotiated modification to work practices were helpful to reduce/manage fatigue for employees returning to employment following cancer treatments (Tiedtke et al., 2010), after traumatic brain injuries (Beaulieu 2019), and for employees on leave due to mental health issues (Smith et al., 2020). Following a depressive episode effective implementation of role accommodation and a graded RTW were highlighted as key components of an effective strategy (Corbière et al., 2018a). Similarly, interviews with employees returning to work due to mental health issues, revealed themes such as role changes, task modifications, and changes to work schedule were associated with improved outcomes (Bastien et al., 2019). In a comparison of returned and non-returned workers following surgery, employees offered light duties had a significantly higher rate of RTW (Mukai & Morioka, 2020). Longitudinal studies have also observed that for employees not offered role accommodations,

symptoms of depression and fatigue were significantly higher at 18 months (compared to employees with access to workplace accommodations; Taskila et al., 2011).

- **Work stress:** Excessive work stress is associated with a range of negative employee outcomes, and these effects are heightened for employees returning from illness or injury. In their review of prognostic factors regarding the RTW of employees with common mental health issues, de Vries and colleagues (2018) found exposure to work stress and psychological strain were consistently linked to negative RTW outcomes. A systematic review conducted to explore employee RTW, highlighted employee stress as a key factor related to poor work outcomes (Cornelius et al., 2011). Similarly, Soderberg and colleagues (2015) argued that negative psychosocial workplaces which enable high levels of stress and strain were significantly related to slower RTW. Similar results were produced by quantitative surveys (Ullrich et al., 2020) and qualitative interviews (Böttcher et al., 2012) with employees on leave due to cancer. Research exploring the efficacy of RTW interventions found those designed to mitigate sources of stress were highly effective at enhancing recovery outcomes (Mikkelsen & Rosholm, 2018; Pijpker et al., 2020).
- **Job demands:** Related to employee stress outcomes, increased job demands are consistently linked to a delayed or failed RTW following injury or illness. Figueredo et al. (2020) found reducing job demands enhanced employee RTW. Similarly Netterstrøm and colleagues (2015) linked self-reported job demands to a longer recovery time, and increased probability of early retirement (Böttcher et al., 2013). In their systematic review, de Vries et al. (2018) demonstrated both perceived stress and ratings of job demands were related to poor outcomes for employees on sick leave. Other research has demonstrated that even after controlling for symptom severity, job demands remained a significant predictor of delayed RTW for employees on leave for musculoskeletal injuries (Corbière et al., 2017). In their analysis Taskila et al. (2011), found workplace demands significantly predicted fatigue ratings in cancer patients at 6-month follow-up. Whilst in a Japanese sample of employees absent due to mental health, organisational rank predicted the length of leave required before return (Sakakibara et al., 2019).
- **Physical job demands:** In addition to generic workplace demands, specific physical role responsibilities have also been linked to negative outcomes for workers during their return and recovery (Goorts et al., 2020; Taskila et al.,

2011). For example, Neutel et al. (2019) found an effect of job type, such that for musculoskeletal injuries white-collar work was related to faster recovery rates, whilst Söderberg et al. (2015) found similar effect whilst delineating between passive and active work roles. Gowd and colleagues (2019) found that roles maintaining fewer physical demands (i.e., categorised as sedentary, light, moderate, and heavy duties) were related to faster recovery for employees on leave due to rotator cuff injury.

- **Contact with the organisation:** Other organisational processes such as maintaining contact throughout rehabilitation have been found to enhance the RTW following an injury or illness. For example, de Rijk et al. (2019) demonstrated that remaining in-touch with the absent employee and maintaining regular follow-ups were related to improved employee return. Reviewing some RTW interventions, Mikkelsen and colleagues (2018) found strong evidence to support the beneficial effects of maintaining contact with employers during recovery. Similarly, Johanson and colleagues (2020) reported beneficial effects for injured employees maintaining the engagement of direct line managers.
- **Supervisor support:** Of the social relationships maintained by employees contact and support received from supervisors is extremely important, especially during the employee's RTW processes. For example, Smith et al. (2020) found supervisor's reaction to an employee's RTW can directly reduce the perceptions of negative symptoms and enhance the return processes. Other research reports that difficult relations with supervisors is predictive of a reduced probability of RTW at 6 months (Corbière et al., 2017; Etuknwa et al., 2019; Netterstrøm et al., 2015). Cornelius et al. (2011) identified that frequent communications with supervisors resulted in more positive employee RTW outcomes, as did supervisor's provision of gratitude, understanding, and encouragement (Mukai & Morioka, 2020).
- **Work autonomy:** Similar to other stress and strain processes, the level of control and autonomy exhibited by employees was related to improved RTW outcomes. For example, Black et al. (2017) highlighted these benefits for patients on leave due to musculoskeletal injuries and mental health issues, as increased autonomy was linked to increased perceptions of confidence and self-efficacy regarding recovery processes. De Vries and colleagues (2018) argued the benefits of increased autonomy are especially important when job demands and employee strain are also heightened. Similarly, RTW

interventions aimed at increasing employee role autonomy were found to be effective and enhanced the subsequent RTW outcomes (Pijpket et al., 2020). Goorts et al. (2020) identified autonomy to be a key psychosocial factor associated with a faster RTW. The ability to maintain a balance between work and health outcomes also assists a sustained RTW (Figueredo et al., 2020) and an earlier return amongst employees on leave due to breast cancer (Cooper et al., 2013).

4.4.3 RTW stakeholder factors

The final category targeted the modifiable factors exhibited by other RTW stakeholders. These include factors that remain the remit of governmental policy makers, medical organisations, or other entities that support beneficial employee RTW outcomes following an injury or illness.

- **RTW process control/planning:** Of the modifiable factors identified, control regarding RTW processes and decisions was amongst the most frequently observed factor. Smith and colleagues (2020) found frequent consultation and planning RTW processes explained significant differences in RTW outcomes for both musculoskeletal and psychological injuries. The creation of RTW plans and work-related problem-solving were related to more sustained employment following absence due to musculoskeletal and mental health issues (Gismervik et al., 2020). Estaban et al. (2018) demonstrated that maintaining a clear strategy regarding employee RTW and active involvement in planning were associated with positive return outcomes. Similarly, Thisted and colleagues' (2018) systematic review also highlighted the benefits of employees maintaining a sense of control over these processes. These findings support other research evidence demonstrating that maintaining control (Ahrberg et al., 2010) and regaining control over one's life more broadly (Johansson et al., 2016; Lork & Holmgren, 2018), were factors directly related to increased motivation and subsequent positive RTW outcomes (Dunstan et al., 2013; Sandmark, 2011). RTW interventions designed to increase decision-making and control have also been linked to improved employee outcomes (Pijpker et al., 2020).
- **Medical treatment/support:** Unsurprisingly, receiving appropriate treatment for injury and illness improves the rate of RTW (Dorland et al., 2018; Zieger et al., 2010). However, the perception of support received from medical staff is also linked to improved outcomes. For example, de Vries et al. (2014) found perceptions of insufficient care from physicians was a key theme in employees

RTW experiences. Additionally, building collaborative relationships with health care teams (Johanson et al., 2020), or alternatively an absence of cooperation or coordination between stakeholders, was also identified as a major theme for employees (Thisted et al., 2018). The occurrence of a low-stress (i.e., supportive) contact between employees and RTW coordinators was significantly associated with increased RTW self-efficacy (Black et al., 2017).

- **RTW processes (other):** A number of other themes were also identified regarding supportive RTW processes which did not directly align with the other categories. For example, the timing of rehabilitation processes, and aligning these with individual goals was a theme identified through interviews with absent employees (Corbiere et al., 2018; Esteban et al., 2018). Also fears exhibited by employees regarding a premature RTW were also found to be influential (de Vries et al., 2014). Other factors such as the employer's need for more structured procedures regarding RTW processes (De Rijk et al., 2019) and developing subjective norms for returning to work following an absence (Dunstan et al., 2013) were also identified to be important.
- **Informational support:** Other modifiable factors include the availability of information to multiple stakeholders. This included employer information regarding their best practices for cancer survivors returning to work following an absence (de Rijk et al., 2019). A perceived absence of guidance related to returning to work, in addition to low levels of informational support, were identified as key worries for employees during their return process (Dugan et al., 2021). Other research identifies that patients perceived they were issued with too little advice on returning to work following surgery (compared to medical advice regarding treatment effects; Bardgett et al., 2016).
- **RTW process issues:** Exploring the issues that can arise from these RTW processes also highlights potential modifiable factors to improve RTW outcomes. For example, Lynoe et al. (2013) found negative encounters with RTW stakeholders impeded individual perceptions of their ability to RTW. Factors such as patient's dissatisfaction with RTW planning, or an absence of a clearly defined plan (Materne et al., 2019), or perceived uncertainty regarding return (Soeker, 2012), also each emerged as barriers to a successful RTW. Additionally, difficulties related to integrating various processes provided by specialists and medical services (especially when these were conflicting) was found to hinder successful rehabilitation outcomes (Johanson et al., 2020).

- **RTW process support/financial support:** Other supports perceived by employees during their recovery were also identified as key themes. For example, Nigatu et al. (2017) identified that frequent contact with medical specialists was a significant factor predicting facilitation of employee return outcomes. The need for trust and an alignment of expectations amongst various RTW stakeholder groups were also found to be relevant (Scharf et al., 2020). In addition to supportive processes, evidence suggested the receipt of private health benefits (So et al., 2020; Thomson et al., 2019) also enhanced RTW outcomes. However, in contrast other research has linked the receipt of benefits with poorer RTW outcomes (Ruile et al., 2020).

4.4.4 RTW interventions

The most commonly investigated modifiable features observed in the literature are related to RTW interventions. These included a range of interventions targeting psychological therapies (i.e., cognitive behavioural therapy, interpersonal therapy, or these combined with workplace-based skills training). We summarise these interventions from the included literature below:

- **Collaborative interventions:** Interventions designed to facilitate cooperation between organisations and external medical systems have shown to be effective. For example, Reifferscheid et al. (2019) worked with organisational stakeholders to develop early detection, treatment, and support protocols for employees requiring treatment for common mental disorders. Compared to control groups (receiving standard care), employees involved in the intervention returned to work 91 days earlier than the standard care groups. Esteban et al. (2018) reported that actively involving various RTW stakeholders resulted in improved employee outcomes, for employees absent due to mental health or musculoskeletal issues,
- **Clinical interventions:** Other intervention research compared differing interventions types, usually based on their ability to reduce primary symptoms and to enhance RTW outcomes. Aggregating the findings across multiple interventions to support the early RTW for employee's absence due to mental health outcomes, Axen and colleagues (2020) found both **work-focused cognitive behavioural therapy** and **problem-solving skill interventions** successfully decreased delays, compared to the treatment-as-usual groups. Salomonsson et al. (2020) found that for employees with exhaustion disorder

and heightened stress, cognitive behaviour therapy interventions resulted in fewer reported symptoms, however no significant differences were observed in workplace absence outcomes. Dalgaard and colleagues (2017) also reported that cognitive behavioural therapy improved RTW for employees with stress complaints. Comparing differences between inpatient multimodal occupational rehabilitation and outpatient acceptance and commitment therapy for mental health and musculoskeletal disorders, Gismervik and colleagues (2020) observed no differences at 6 months, however at 12-month follow-up employees in the inpatient group reported 32 fewer sick days. Other research identifies acceptance and commitment interventions as improving RTW expectations for 33% of patients (compared to 48% showing no effects), leading to more sustained returns after 9 months (Aasdahl et al., 2019). Other evidence reports that employing multicomponent interventions leads to more successful employee outcomes (Mikkelsen & Rosholm, 2018). Assessing employee's absence due to heart disorders, O'Brien and colleagues (2018) found both psychological-based and vocational counselling-based interventions improved work absence at 3 months (compared to a treatment-as-usual group), however these effects were negated at both 6- and 12-month follow - which is interesting and requires further attention. Finally, research has also found motivational interviewing techniques resulted in less sick leave for employees absent with musculoskeletal issues (Gross et al., 2017).

- **Physical interventions:** For individual absence due to workplace stress and exhaustion, physical interventions may prove effective. In their narrative review, Wallensten et al. (2019) argued for the both psychological-based interventions (i.e., work-focused cognitive behavioural and workplace dialogue interventions) and those targeting employee sleep patterns and aerobic training. The authors argued a combined approach is likely to yield beneficial results.
- **Skills training:** Research assessing meta-cognitive training for employees on sick leave (over 8 weeks duration) for exhaustion, mental distress, and chronic pain disorders, found support for interventions designed to reduced employee catastrophising. These interventions produced 5-20% improved odds of returning to work at follow-up (Jacobsen et al., 2020). Similarly, Soeker and colleagues (2019) advocated for coping skills training for employees with schizophrenic issues. Wisenthal et al. (2018) also reported that the use of workplace simulations and cognitive training designed to prepare sick employees for a RTW, was related to improved workability, reduced fatigue, and less symptoms at 3-month follow-up.

- **Organisational contact:** In their meta-analysis of different RTW interventions, Mikkelsen and Rosholm (2018) reported that interventions which included **organisational contact** were consistently related to improved RTW outcomes (across multiple injury/illness types). Whilst Esteban et al. (2018) found interventions involving organisational **peer groups** resulted in improved employee outcomes.

4.4.5 Summary of modifiable risk factors

As highlighted in the modifiable risk factors analysis, there remain multiple avenues through which individuals, organisations, and medical/support staff can impact beneficial RTW outcomes for injured and sick employees. From an individual perspective, employees can effect a change in attitudes or motivation through reframing negative experiences, efficient use of goal setting processes, or seeking out additional support. Although individual-level factors may be generally resistant to change, such factors can be identified and modified. For example, the use of inappropriate coping styles can be noted and efforts to adopt more solution-focused coping can be implemented, resulting in more positive RTW outcomes.

From these analyses, organisational-level modifiable features were the most frequently observed within the literature. These organisational-level features included employee support (i.e., organisational support, supervisor support, and social support more broadly), maintaining contact and communications with the organisation, and processes related to employee stress outcomes (i.e., occupational stress, job demands, and work autonomy). Given employees returning from injuries and illnesses are likely to already be experiencing strain by adjusting to their previous work roles, it is unsurprising elements which further exacerbate these stress outcomes result in worse sustained RTW outcomes. Other common factors included interventions designed to target these stress processes. For example, the availability of options for role accommodations or graded return programs were consistently found to support employee return and retention following an injury or illness.

The final level of analysis we conducted consisted of other non-organisational or individual stakeholders, these included medical staff, government policy, and other RTW support staff. Modifiable factors identified in these analyses described common issues regarding employee's RTW processes. For example, the ability to exert control and ownership regarding RTW processes and planning was found to relate to positive psychological reactions and to improved RTW outcomes overall. Similarly, maintaining collaborative relationships between various stakeholders, and ensuring these

expectations were aligned (between stakeholders and employee goals) was also found to support employee work outcomes. Access to informational support provided by medical staff and from employers was also found to be useful and resulted in less ambiguity and uncertainty for employees during their recovery processes.

4.5 Summary of Barriers and Enablers

Collectively these findings identify a multitude of barriers and enablers assessed within the research literature which have demonstrated successful RTW outcomes for employees recovering from injury or illness. In addition to employee psychological reactions, factors related to the actual injury/illness or co-morbidity characteristics such as the severity of the injury, previously existing medical conditions, treatment side-effects, or physical limitations were demonstrated to reduce successful RTW outcomes.

Examination of the positive factors which improved the likelihood of employees returning to their occupation were also investigated. These enablers included aspects related to the employee's confidence, such as RTW self-efficacy, RTW expectations, perceived work-ability, and RTW motivation. In particular the levels of support provided to employees during their recovery were also related to improved outcomes such as, higher perceived social support, organisational support and resources, support regarding RTW processes, and workplaces who allowed role accommodations or graded RTW processes. Other aspects related to the individual's demographic information or health were also identified to support the RTW following an injury or illness, such as younger age, better physical health, levels of education, or financial stability. Additionally, studies which included longitudinal methodologies, reported time as a significant predictor of improved outcomes (for both psychological reactions and employee return more broadly).

5.0 Qualitative Interviews with RTW Stakeholders

Section Aims:

Based on the interviews with some of Safe Work Australia's stakeholder groups and the grey literature search, what are the best practice recommendations and examples to support workers and minimise the risk and impact of negative psychological responses to work-related injuries or illnesses?

A total of six interviews were conducted with some of Safe Work Australia's external stakeholder organisations, and thematic analysis of the qualitative data suggest that providing more training focused on **empathetic communication, mental health and well-being**, and **role clarification** is an area for consideration to enhance existing RTW processes. Additionally, having a **key person in charge of dealing with the multiple stakeholders** for the injured or sick worker would assist with relieving some of the stress s/he experiences in their RTW journey.

A series of interviews were conducted with external stakeholder organisations to understand their perspectives of RTW policies, procedures, and experiences with injured workers. A total of six interviews were conducted, with an additional three written responses received (nine in total; see Table 2 for an overview). Thematic analyses of the qualitative data resulted in a total of six major themes being produced: (1) work-related RTW barriers, (2) work-related RTW enhancers, (3) non-work related RTW barriers, (4) non-work related RTW enhancers, (5) individual RTW barriers, and (6) individual RTW enhancers. The most frequently mentioned results within each theme are described below, with a comprehensive list of the themes and all codes presented in Table 3.

1. **Work-related RTW barriers:** A lack of managerial support and recognition of psychological responses to injury were identified as common workplace barriers by external stakeholders, particularly if there is minimal mental health training provided to managers. Unexplained absences, presenteeism, and lowered productivity were also commonly mentioned barriers. Poor change and claims management processes within the organisation were frequently mentioned barriers, which can delay treatment, compensation, and support in response to injuries, resulting in more serious psychological injuries. Other codes also emerged in relation to the job, including high job demands and lack of role clarity, recognition, and reward.

2. **Work-related RTW enhancers:** Early intervention was the most common code mentioned by external stakeholders. Early intervention provides injured workers with opportunities to identify relevant support networks, develop recovery plans, and education regarding the injury. Organisational and managerial support also emerged throughout the interviews as a protective factor. Constantly “checking in” by managers with injured workers, especially at the beginning of the RTW process helps to reduce the stress associated with the RTW. There was also an emphasis on managers using “soft skills” to increase open communication with injured workers, which can assist to remove the mental health stigma associated with RTW. Flexible working arrangements was the most common policy identified. Allowing employees to have a greater say in how they RTW often reduces employee stress, especially when discussed with healthcare professionals. A centralised case management service through a RTW coordinator/case manager can reduce the number of stakeholders the injured worker has to communicate with, which can reduce confusion, anxiety, and delays in the RTW process. Finally, mentally healthy workplace cultures, RTW advocates, and promotion of services (e.g., Employee Assistance Programs) were also mentioned as RTW enhancers.
3. **Non-work RTW barriers:** The general mental health stigma was a frequent non-work barrier mentioned throughout the interviews, making it difficult for employees to speak up about their psychological injuries. Furthermore, poor/unhelpful messaging from treatment providers (e.g., being told the injury may take longer to recover from than first expected) can exacerbate negative psychological responses to injury. Employees having to work with multiple stakeholders during the RTW process, was mentioned as a common barrier to recovery, particularly due to the additional stress, ambiguity, and effort required to manage the RTW process. Finally, a lack of mental health training in professionals (e.g., physiotherapists only being trained in physical health) may prevent these professionals from identifying potential negative psychological responses to injury.
4. **Non-work RTW enhancers:** Positive relationships with family, friends, health practitioners, and other providers were frequently mentioned non-work RTW enhancers. There was also a common emphasis on education opportunities for employees to know what types of help are available and how to receive help should they need it. Employee accessibility to treatment, general practitioner’s and other stakeholders’ understanding of the RTW processes and procedures also resulted in successful RTW outcomes.
5. **Individual RTW barriers:** Multiple RTW barriers were identified throughout the interviews, including negative speech, physical and mental comorbidities, physical

and social isolation, previous mental health issues, and depressive and anxious symptoms. Other individual barriers mentioned were fear of returning to work, lack of trust in healthcare professionals and other providers, as well as feelings of injustice or unfair treatment regarding their injury.

6. **Individual RTW enhancers:** Finally, RTW enhancers identified by the interviewees included resilience, self-efficacy, high levels of motivation, and health literacy. Positive recovery expectations and attitudes generally resulted in faster RTW as compared to cases where recovery expectations were negative.

Table 2. Overview of interview stakeholders and response type

Organisation	Response Type
Arabon Accountants	Verbal interview
Healthy Heads in Trucks & Sheds	Verbal interview
Teletrac Navman	Verbal interview
NSW State Insurance Regulatory Authority	Verbal interview
ACT Workplace Safety and Industrial Relations	Verbal interview
WorkSafe Victoria	Written
QLD Workers' Compensation Regulatory Services	Written
Workcover WA	Written
Comcare	Verbal interview

In summary, the qualitative interviews suggest that providing more training focused on empathetic communication, mental health and well-being, and role clarification is an area for consideration to enhance existing RTW processes. Additionally, should resources allow, having a key person in charge of dealing with the multiple stakeholders for the injured or sick worker would assist with relieving some of the stress s/he experiences in their RTW journey.

Table 3. Most frequent interview themes and codes

Theme	Work-Related RTW Barriers	Work-Related RTW Enhancers	Non-Work RTW Barriers	Non-Work RTW Enhancers	Individual RTW Barriers	Individual RTW Enhancers
Codes	Lack of managerial support (3) Unexplained absence (3) Presenteeism (3) Lowered productivity (3) Poor change management (2) Sudden change of work hours (2) Occupational differences in approach to treatment (1) Lack of recognition of warning signs (1) Long hours/shift work (1) Exposure/re-exposure to traumatic events (1) Inadequate claims management (1) Workers justifying symptoms/injury to managers (1) Relationship breakdown with managers/colleagues (1) Employer lack of communication (1) High job demands (1) Low recognition, reward, and role clarity (1)	Early intervention (17) Colleague/supervisor support (12) Culture (11) Frequent “check-ins” by managers (7) Opportunities (5) Good union representation and employee groups (4) Direct consultations with employee (4) Flexible work arrangements (3) Internal RTW advocates (3) Promotion of services (eg EAP; 3) Tailored approaches to cases (3) Job security (2) Mental health training for managers (2) Job control (2) Relevant stakeholders in RTW process (2) RTW coordinator (2) Employees being active in their RTW process (2) Financial support (eg allowances; 2) Centralised case management services (2) Appropriate RTW tasks (1) OH&S practices (1)	General mental health stigma (6) Lack of stakeholder coordination: mixed messages to injured worker (3) Inadequate /unhelpful messaging from treatment providers regarding expectations (3) Dealing with multiple stakeholders (2) Lack of mental health training in professionals (2)	Education opportunities (7) Family support (6) Better triage (4) Friends (3) Positive relationships with health practitioners and providers (3) Accessibility of treatment (2) Sense of control (2) Health allowances (1) GP understanding RTW processes and procedures (1) Stakeholder awareness of RTW process and procedures (1)	Negative speech (4) Physical and mental comorbidities (4) Physical and social isolation (4) Cultural background (3) Previous mental health issues (2) Sense of injustice/unfair treatment (2) Fear of returning to work (2) Relationship breakdowns (2) Tiredness (2) Financial pressure (1) SES (1) Lack of trust in healthcare professionals (1) Unemployment (1) Age (1) Poor coping (1) Mood swings (1) Agitation (1)	Motivation (2) Positive recovery beliefs (2) Positive attitude and expectations (2) Resilience (2) Self-efficacy (2) Health literacy (1)

6.0 Grey Literature Review

Section Aims:

Based on the research what practical processes can be implemented to enhance positive outcomes for employees recovering from illness and injury?

Across the grey literature exploring employee return to work processes, several mechanisms were identified through which improved employee outcomes could be achieved. For example, **workplace processes** (i.e., workplace accommodative practices, graded return policy, early contact between supervisors and employees, cooperation with RTW stakeholders, and reducing workplace stressors) can be implemented to increased employee outcomes. Similarly, supporting positive **healthcare related processes** (i.e., given access to treatments and consultations, development of stress management programs, and collaboration between workplaces and medical supports), **insurance/compensation processes** (i.e., receipt of compensation, wage compensation, minimal claim related issues, supports offered and perceptions of fairness during claims processes), and **personal processes** (i.e., improving perceptions of RTW self-efficacy, recovery expectations, remaining connected to work, and seeking support) were related to improved employee return to work outcomes.

To provide a comprehensive review of the literature regarding psychological reactions to returning to work, an additional review of the “grey” literature of government documents and publications was conducted. A comparison between four countries namely Australia, New Zealand, Canada, and the United Kingdom yielded four superordinate themes. Specifically, factors related to the workplace, factors related to healthcare, factors related to compensation claims, and factors related to the individual.

- **Workplace factors** are factors arising from the employee’s work environment. Across all four countries, several workplace features and processes have consistently been shown to support RTW outcomes: effective RTW program, regular contact and follow-up from the employee’s supervisor, adjusted workload, roles, and duties, and cooperation with multiple stakeholders (e.g., employer, union, insurer, and medical professionals) assisting the employee to RTW. In contrast, these workplace factors have been shown to be an impediment to the employee’s RTW: high and stressful work demands, inability to modify job tasks and demands, lack of social support from supervisors and co-workers, and job dissatisfaction.

- **Healthcare factors** are factors relating to the employee's health and access to healthcare facilities. These healthcare factors have been shown to facilitate RTW: provision of work-focused healthcare, onsite health and exercise facilities, access to medical treatments, interventions, and workshops, and consistent advice from medical professionals and employers to employees.
- **Insurer/Compensation factors** are factors relating to compensation and insurance that cover employers for the costs of work-related injuries and provide injured workers with compensation, medical costs, and other benefits to support them in their recovery and RTW. Insurer/Compensation factors that hinder RTW include: administrative delays or legal activity concerning claims processes (i.e., claims, assessments, and compensation). In contrast, insurer/compensation factors that support RTW include: supportive interactions with insurers, cultural and/or language support, appropriate levels of wage compensation, and timeliness of compensation.
- **Personal factors** are factors proximate to the individual and thus influence the individual RTW process to a large extent. Personal factors that support employee RTW include: self-efficacy, early RTW, strong recovery expectations, and high perceived work ability. In contrast, personal factors that hinder employee RTW include: feelings associated with denial, shame, or fear, poor conditions at time of departure from organisation, presence of radiating pain, fears of re-injury or pain, fear avoidance, and concerns about making a claim.

Table 4 below summarises and compares the factors across all four countries:

Table 4. Summary and comparison of grey literature factors across Australia, New Zealand, Canada, and the United Kingdom.

	Australia	New Zealand	Canada	United Kingdom
Documents	National Return to Work Strategy 2020-2030 - Safe Work Australia	Supporting a return to work after illness or injury - business.govt.nz (2020) & Accident Compensation Corporation (ACC) New Zealand & WorkSafe NZ	The Fundamentals - Return-to-Work Plan - Government of Canada (2011) & Factors affecting RTW - Institute for Work & Health (2012)	Managing sick leave and return to work - HSE (2020) & Phased return to work after sickness absence - Fit for Work (2016)
Workplace Factors	<p>The successful RTW of a worker following an injury usually involves four factors:</p> <ol style="list-style-type: none"> 1. Early, positive contact from the worker's supervisor or manager 2. An effective workplace rehabilitation program (work accommodation, RTW planning, and RTW coordination) 3. Effective and supportive claims management practices 4. Cooperation, consultation and coordination between stakeholders 	<p>Factors helping injured/sick employees to stay at work:</p> <ol style="list-style-type: none"> 1. Swapping some tasks for others they are more able to do 2. Adjusting work schedules so they can work when they feel most well 3. Reducing work hours, if possible, then building up as their health improves 4. Allowing time off to go to medical appointments or counselling 5. Adjusting the physical work environment (e.g., maybe so they can sit, or altering noise or light levels for their comfort) 6. Flexible sick leave, and leave without pay provisions in employment agreements 	<p>Factors that influence RTW:</p> <ol style="list-style-type: none"> 1. Work-related factors, including physical demands of the job, job satisfaction and the offer of modified work 2. Workplace psychosocial environment (i.e. factors related to work pace, control, social support, adjustment of performance expectations) 3. Maintaining contact and following up 4. Respect of confidentiality 5. Joint efforts by employer, insurer, and union 6. Preparation of co-workers to support employee's RTW 	<p>Work-related psychosocial and contextual factors:</p> <ol style="list-style-type: none"> 1. High work demands 2. Inability to modify work 3. Stressful work demands 4. Lack of workplace social support 5. Job dissatisfaction 6. Poor expectation of recovery 7. Fear of re-injury
Healthcare Factors	<ol style="list-style-type: none"> 1. Work-focused healthcare 2. Amount of medical intervention (e.g., treatments and consultations) 	<ol style="list-style-type: none"> 1. Onsite gym, health coaches and exercise sessions for all levels of fitness/ability 2. Worktime workshops address on managing stress or fatigue 	<ol style="list-style-type: none"> 1. Workers' interactions with health-care providers (i.e. type of health-care provider seen and nature of care received) 2. Treatment-related issues (e.g. health-care provider response to patient pain) 3. Physician-employer collaboration 	<ol style="list-style-type: none"> 1. Consistent advice from GP and other health experts (e.g., physiotherapist) and the employer to the employee

Insurer/ Compen- sation Factors	1. Administrative delays 2. Receipt of compensation 3. Amount of wage compensation 4. Quality of interaction with insurer 5. Lawyer involvement	1. Ease of application for claims, assessment, and compensation of lost earnings 2. Prompt payment of claims 3. Cultural and language support	1. Claim-related issues (i.e. type , timeliness and perceived fairness of claims for disability benefits)	1. Claim-related issues (i.e. timeliness and prompt assessments)
Personal Factors	1. Pain catastrophising/fear avoidance : workers who describe a pain experience in more exaggerated terms, ruminate on or feel helpless about pain (catastrophising) or who avoid pain-related situations (fear avoidance) have poorer RTW outcomes. 2. Concern about making a claim : workers who are concerned about making a claim have poorer RTW outcomes. 3. Recovery expectations : workers with stronger expectations that they will recover from their injury/illness have better return work outcomes. 4. Self-efficacy : workers with greater belief in their ability to achieve goals (such as recovery or RTW) have better RTW outcomes. 5. Perceived work ability : workers who perceive their ability to function in the workplace as lower than normal have poorer RTW outcomes.	1. Earlier RTW will facilitate the return-to-work process, as keeping connected to work, and maintaining your income and work relationships are likely to help with the recovery process.	1. Workers' recovery expectations (i.e. their predictions about how likely it is they will RTW and/or how long it will be before they are able to return) and performance expectations 2. Workers' self-reported pain and functional limitations (or disclosure) 3. Presence of radiating pain (an indication of the severity of the injury) 4. Feelings associated with denial, shame, or fear 5. Poor conditions at time of departure from organisation	1. Early RTW 2. Psychosocial risk factors (e.g., catastrophising fears about pain or injury and unhelpful beliefs about recovery) 3. Perceptions of workload 4. Medical history

6.1 Best Practice Recommendations

Best-practice recommendations from the grey literature (consisting mainly of governmental documents from Australia, New Zealand, Canada, and the United Kingdom) were also identified and summarised in Table 5 below. Note it was not always clear if the recommendations were evidence-based, especially those offered by the relevant bodies in New Zealand, Canada, and the United Kingdom.

Comparison and analysis of the grey literature revealed that Australia is ahead in enacting evidence-based practices and providing evidence-based recommendations on returning to work after a workplace injury or illness. Nevertheless, there are three primary areas of development Australia should consider further, based on the best practices enacted in New Zealand, Canada, and the United Kingdom:

1. **Identifying RTW best practices for specific types of illness and injury.** For example, Canada has recommendations for specific injuries such as acute low-back pain and work-acquired musculoskeletal disorder, and illnesses such as cancer and mental illness.
2. **Provision of cultural and language support to workers of culturally and linguistically diverse (CALD) backgrounds.** In our grey literature search, we noted that iCare NSW and WorkSafe Victoria have directly considered their communications about health and safety in a CALD workplace. Nevertheless, more research on CALD workers in the RTW context should be conducted, alongside more targeted support and outreach. CALD workplace research conducted in New Zealand and Canada has also emerged in the past five years, indicating that language barrier is a serious impediment at all stages of the RTW process and is a factor to be carefully considered in our RTW processes.
3. Finally, in light of the COVID-19 pandemic, multiple work health and safety (WHS) bodies across the world are also utilising **telehealth and telemedicine for remote injury and illness management**. As the pandemic is an evolving situation, and the infrastructure surrounding telehealth and telemedicine differs within each country, it is recommended that further research and resources are dedicated to this emerging area, in order to identify best practices most effective for supporting workers in their RTW.

In summary, it is suggested that enhanced consideration of these three areas is undertaken by Safe Work Australia, in order to provide targeted support to organisations across different industries, and to workers in under-represented groups and in remote locations.

Table 5. Best practice recommendations from the grey literature

	Australia	New Zealand	Canada	United Kingdom
Documents	National Return to Work Strategy 2020-2030 - Safe Work Australia	Supporting a return to work after illness or injury - business.govt.nz (2020) & Accident Compensation Corporation (ACC) New Zealand & WorkSafe NZ	The Fundamentals - Return-to-Work Plan - Government of Canada (2011) & Factors affecting RTW - Institute for Work & Health (2012)	Managing sick leave and return to work - HSE (2020) & Phased return to work after sickness absence - Fit for Work (2016)
Best Practice Recommendations	<p>1. Support from a mature, proactive and engaged workplace, in a well-developed return-to-work system</p> <p>2. Keep injured/ill workers socially engaged in the workplace, which minimises isolation and negative impacts on self-esteem and confidence.</p> <p>3. Get to know managers, supervisors, and staff, and get involved with the workplace health and safety representatives.</p> <p>4. Get to know staff and their roles.</p> <p>5. Engage external experts (e.g., occupational physiotherapist) to come in and assess some of high risk duties.</p> <p>6. Use videos or take photos of yourself doing high risk duties, so people model the different skills and tasks and know that you are being serious about preventing injury.</p> <p>7. Foster RTW skills within supervisory team. Instead of the RTW responsibilities lying with one person, actually empowering supervisors to drive RTW processes themselves.</p>	<p>1. Communication - Agree how much time they need off work, and what they might need from you during that time.</p> <p>2. Agree on a plan - Commit to doing specific things during their time off or recovery.</p> <p>3. Be consistent - Do your best to offer all employees the same accommodations, no matter what role they have in the business or what their situation is.</p> <p>4. Monitor and review - Regularly check in with your employee to make sure the plan is still working for both of you.</p> <p>5. Create a stay at work/RTW policy - Include a stay at work/RTW policy in a Health and Wellbeing policy customised for your workplace.</p>	<p>1. The workplace has a strong commitment to health and safety, which is demonstrated by the workplace parties.</p> <p>2. The employer makes an offer of modified work (that is, work accommodation) to injured and ill workers so that they can return in a safe and timely manner to work activities that are suitable for their abilities.</p> <p>3. Return-to-work planners ensure that their plans support returning workers.</p> <p>4. Managers are trained in work disability prevention and included in return-to-work planning.</p> <p>5. The employer makes a timely and considerate contact with injured and ill workers.</p> <p>6. Someone has the responsibility to coordinate an employee's RTW.</p> <p>7. With the worker's consent, employers and health care providers communicate with each other about workplace demands as needed.</p>	<p>1. A gradual build up towards the employee's usual hours and duties that begins with hours of work that are manageable for the employee at the current stage of their recovery.</p> <p>2. A timeframe that may be as little as one week, and not usually more than 4-6 weeks, unless the employee has a condition with long-term fatigue issues.</p> <p>3. Consideration of work timings that may support a RTW where there is some flexibility, for example hours that allow an employee to avoid a commute in rush hour traffic.</p> <p>4. Duties during the phased return that are beneficial to the organisation but that allow the employee to be confident in their return.</p> <p>5. Review timeframes so that the line manager and employee can adjust, where necessary, or ensure all is on track.</p>

7.0 Mapping Psychological Reactions during Return to Work Processes

Section Aims:

When during these employee recovery processes do these psychological reactions to injury and illnesses emerge?

Although psychological reactions have been demonstrated to emerge throughout the duration of employee return to work processes, the **initial early phases of recovery appear to be the most important**. Psychological reactions experienced in the first 3 months have been shown to influence subsequent delays in employees return to work (i.e., depressive symptoms, anxious symptoms, pessimism regarding RTW, emotional distress, perceived social support, and RTW self-efficacy). Although generally these effects have been shown to decay (or stabilise) over-time; therefore, the predictive relationships between ratings of psychological reactions and employee outcomes are strongest when these are measured on shorter time intervals.

Other works exploring psychological reactions and return to work outcomes have highlighted the utility of exploring **employee trends rather than absolute values**. For example, an employee who initially exhibits low levels of RTW self-efficacy (at baseline) then improves to an average rating (at follow-up) may exhibit better return to work outcomes compared to an employee who consistently reports average levels of RTW self-efficacy. Such processes imply that growth or decline (rather than absolute levels) in psychological processes are an important predictor of return to work outcomes (although more research is required before decisive conclusions can be drawn).

A range of psychological reactions are clearly experienced by employees during their recovery and RTW. However, knowledge regarding at which specific points within this process, employees exhibit these psychological reactions remains unclear. Greater understanding regarding when these psychological reactions occur will enable more effective targeting of interventions and processes designed to mitigate (or enhance) these psychological responses. From our literature review, only 36 articles contained information regarding the timing of these psychological reactions during the RTW process. This information was coded and analysed and is described below in terms of factors that occur prior to the treatment of employee injury/illness, and those exhibited during the early, middle, and late stages of recovery.

7.1 Prior to Treatment of Injury/Illness

Despite the difficulty of collecting information prior to an unknown event, several studies utilised retrospective survey designs with questions aiming to gauge the individual and occupational factors which hinder or enable subsequent recovery from injuries and illnesses. Alonso and colleagues (2018) investigated the effects of delayed treatment (i.e., the time between symptom onset and initial treatment) on RTW outcomes for employees effected by common mental health disorders. In their sample they found treatment delay times were associated with longer RTW delays, after controlling for age and duration of therapy. Delays in seeking treatment explained 25% of the differences observed in RTW outcomes within their sample (Alonso et al., 2018). Similar work by Lepiece and colleagues (2017) explored baseline indicators related to successful RTW at 6 months, finding that the length of work absence prior to treatment was the strongest predictor of failure to RTW. Additionally, the diagnosis of an anxiety disorder or alcohol use disorder, and improvements in depressive symptoms, were each linked to an increased likelihood of returning to work after 6 months (Lepiece et al., 2017). Marco and colleagues (2018) reported a similar pattern, whereby delayed treatment resulted in slower RTW, however it is unclear if illness severity (rather than treatment delay) could provide a simpler explanation of these effects. Finally, Mishima and colleagues (2020) found the frequency of previous work absence (due to mental health concerns) was related to less sustained RTW at 3 years follow-up.

From an organisational perspective Netterstrom and colleagues investigated retrospective factors (rated over the previous 12 months) associated with low RTW outcomes for employees on stress leave. High strain employee environments characterised by high levels of occupational stress, low levels of autonomy/control, low levels of perceived rewards, minimal support (from colleagues and supervisors), and bullying incidents were found to predict delayed return for employees on stress leave (Netterstrom et al., 2015). The evidence presented regarding pre-treatment effects has largely focused on mental health and stress outcomes. It is therefore, unclear if similar changes to organisational processes would also impact RTW outcomes for physically-based injuries and illnesses.

7.2 Early Stages of Employee Recovery

The initial months following an injury/illness are a critical time to influence positive RTW outcomes for injured or sick employees. Psychological reactions experienced within the initial 3 months have been shown to influence long-term delays in employee RTW processes. For example, initial levels of pessimism regarding recovery expectations for

patients with whiplash, have been linked to increased experiences of pain symptoms and reduced work ability at 12 months (Gehrt et al., 2015). Orchard and colleagues (2019) found initial levels of perceived injustice regarding compensation claim processes and information, were related to increased emotional distress at 6- and 12-months post-injury. In samples of employees who have sustained brain injury the presence of depressive and anxious symptoms within the first 3 months was strongly associated with a failure to RTW after 12 months (De Jonge et al., 2014). Whilst for employees hospitalised for unintentional injuries, Kendrick and colleagues (2017) showed that depressive symptoms and a greater need for crisis support within the first month, were related to low RTW outcomes at 12 months.

Others have mapped recovery trajectories dependent on baseline psychological reactions. For example, Arends et al. (2019) employed cluster analysis to identify membership of fast versus slow recovery groups based on depressive symptoms, anxious symptoms, and workability. Participants with high work engagement and/or heightened readiness to maintain employment at baseline had the highest probability of membership in the fast recovery group (Arends et al., 2019). Other research has focused on the prognostic value of RTW self-efficacy in employees absent for common mental health issues. Employees with consistently high self-efficacy, and those who reported an increase over the initial months displayed high RTW outcomes (Lagerveld et al., 2016). Following these results Victor and colleagues (2018) advocated for the utility of early measures of perceived workability and expectations regarding recovery, arguing interventions should focus on these psychological reactions to improve RTW outcomes (in addition to injury/illness medical treatments).

Similarly, Black and colleagues (2019) found the benefits of RTW self-efficacy reduced overtime, with levels at initial measurements being predictive of sustained RTW at 6-month follow-up. However, RTW self-efficacy measured at 6-months was not predictive of later RTW. This implies that the initial effects of RTW self-efficacy are more critical compared to its later development (Black et al., 2019). Similar findings were reported by Watt and colleagues (2015), such that early development of fear-avoidant beliefs resulted in a decreased recovery and mental health outcomes which subsequently decreased future recovery outcomes.

7.3 Middle Stages of Employee Recovery

Less is known about the psychological reactions exhibited following the initial months after an injury or illness and how these reactions differ from early psychological outcomes. Using a sample of injured employees, Tezel and Can (2020) reported that initial negative psychological reactions exhibited by employees (i.e., depression and

anxiety) steadily decreased over the following months of recovery. For employees receiving treatment for cancer, depressive symptoms decreased over the initial 12 months, but were then stable during the period of 12-18 months of treatment (Dorland et al., 2018). Lin and colleagues reported ratings of anxious symptoms at 3 months were related to low employee recovery. Interventions designed to facilitate RTW found that reduced fear-avoidant beliefs at 4-month follow-up were related to improved RTW outcomes (Marchand et al., 2015). Similarly, Jacobsen and colleagues (2020) showed that a reduction in worry cognitions throughout treatment was predictive of improved recovery outcomes. Interestingly, only reductions in worry cognitions and *not* baseline levels were related to RTW. McAleavey and colleagues (2018) reported that negative emotions regarding damage to physical appearance (for burn injuries) increased over the first 6 months before stabilising. Finally, Dorland et al. (2018) showed the provision of social support from colleagues and supervisors also decreased steadily over the initial 6 months, before stabilising at 12-month follow-up.

7.4 Long-Term Effects of Employee Recovery

Minimal research has explicitly explored the long-term effects of psychological reactions to employee injuries and illnesses, and this is clearly an period which requires further direct research. Chin et al. (2017) found in their sample of injured workers that symptoms of psychological distress (depression and/or PTSD symptoms) actually *increased* at long-term follow up (6 years after injury). This was especially true for employees with repeated injuries and unstable employment outcomes following their initial injury. Follow-up work by Chu and colleagues (2019), noted that the presence of severe psychological reactions in injured employees (compared to average or minor symptoms), were predictive of worse employment outcomes at 6 years post injury. Other long-term outcomes include negative beliefs and stigma regarding reduced work potential following an injury. For example, Stuart (2004) reported that following an absence from work, a negative stigma regarding workability could develop affecting long-term recovery and employment outcomes.

7.5 Summary of Mapping Psychological Reactions

Although comparatively little research has explicitly explored the temporal aspects of employee psychological reactions to injury and illnesses, the existing research does highlight the importance of the early phases of RTW processes. For example, employee's earlier ratings across a range of psychological reactions (i.e., pessimistic RTW expectations, perceived injustice, depressive symptoms, anxious symptoms, or RTW self-efficacy) are associated with multiple RTW outcomes. However, it should be noted the predictive utility of these relationships appears to decay overtime. For

example as was noted above, initial ratings of RTW self-efficacy were related to RTW at 6 months follow-up, however measures of self-efficacy taken at this time were not related to subsequent outcomes (Black et al., 2019).

Interestingly, the use of employee recovery trends (rather than absolute values) may exhibit predictive properties when assessing employee recovery outcomes (over and above static point estimates). For example, research exploring growth (or loss) trends in RTW self-efficacy over time were predictive of improved RTW outcomes (Brouwer et al., 2015; Lagerveld et al., 2017). Similar work by Arends and colleagues (2019), associated employee baseline measures of engagement and readiness to more positive recovery trends for psychological symptoms such as anxiety, depression, and perceived workability. These findings tentatively suggest that trends in employee recovery and psychological processes exhibit more utility when investigating RTW outcomes.

Additionally, across studies, a general trend is that employee ratings trend towards baseline. That is, depressive and fatigue symptoms are elevated following initial injury/illness, then tend to reduce over time, although exceptions are observed for severe injuries or when injuries affect physical appearances. Similar effects were found for positive psychological reactions such as employee perceptions of social support. For example, Dorland and colleagues (2018) reported that social support peaks after initial diagnosis, then decreased over the first 6 months, before subsequently stabilising.

8.0 Limitations and Research Gaps

Section Aims:

What are the current gaps in the empirical literature regarding employee psychological reactions to injury and illness?

Despite growing interest in research exploring employee psychological reactions following an absence due to injury and illness, there remain gaps in the scientific inquiry regarding these processes.

For example, more complex designs and methodologies could be employed to access the **temporal features of employee recovery processes** (i.e., when do specific psychological reactions emerge). Additionally, it is recommended more **causal modelling is employed** to assess the true causes of relationships between psychological reactions and beneficial employee outcomes (both generally and specifically causal effects between RTW confidence and injury severity).

Through the conduct of this project, several limitations and knowledge gaps were identified within the literature regarding employee psychological reactions to workplace absences. Such limitations provide both risks and opportunities for future work to advance knowledge in the RTW field.

- **Barrier and enablers analysis:** In this report the potential for biases is observed in our analysis of the barriers and enablers of employee RTW processes. Here, the empirical evidence collected and analysed was based on the specific search terms related to employee psychological reactions. This may have produced a bias in the findings, as evidence regarding barriers and enablers from scientific articles which did not specifically target employee psychological reactions was not included. Similarly, for the investigation of modifiable features which enable a successful and prompt employee recovery, these processes were extracted only from literature investigating both RTW and psychological reactions or processes.
- **Psychological reactions to psychological injuries:** There is a clear gap in the literature regarding psychological reactions observed in response to psychological illnesses and injuries, and this is an area recommended for further research. Delineation between these two highly related and overlapping processes is extremely difficult (for both systematic review processes and empirical studies). As reported in the analysis of antecedents of psychological reactions (Section 3.3), the most commonly observed predictor of employee psychological reactions is the

severity of the primary injury/illness. It is unclear to what extent the occurrence of negative feedback loops or overlap, might hinder employee recovery processes, or how such effects may cause other negative psychological reactions to emerge. To successfully delineate and assess these processes requires complex longitudinal methods and statistical analysis (i.e., intensive longitudinal designs, time-series analysis).

- **Grey literature evidence base:** The analysis of the grey literature was conducted to inform insights regarding the practical processes currently being implemented by governments and organisations around the world. Through this analysis, differences were observed regarding the use of the scientifically-based evidence. Generally across this grey literature, evidence produced from Australian sources exhibited the most high-quality evidence base, with these sources largely drawing on scientific peer-reviewed evidence.
- **Limited Private Sector Interviews:** Only one large private sector organisation (Teletrac Navman) participated in the qualitative interviews, which resulted in a limited “blended” perspective of both public and private sector RTW policies, procedures, and best practice examples. The thematic analyses of the interview data did produced themes and codes similar to the scientific and grey literature reviews. However, we anticipate that assessing any differences (or similarities) between the public and private sectors, would have provided greater insight into the best practice examples in these organisations. Again, this is an area recommended for further specific research.
- **Mapping psychological reactions:** Due to the small sample of scientific research employing appropriate longitudinal research designs ($n = 36$), only general conclusions could be drawn about the *processes* (over time) of psychological reactions during employee return (Section 7.0). However, this project did identify some interesting temporal effects regarding the emergence of psychological reactions. For example, the early stages of the employee recovery processes are highly important (compared to the subsequent stages), in predicting RTW outcomes. Although we note that time is relative here: – early stages for cancer treatment differ in comparison with the early treatment of musculoskeletal injuries for example. Additionally, there is a clear need for further research assessing the benefits of growth/loss trends in employee psychological reactions (compared to absolute values), and how these relate to improved RTW outcomes. That is, comparing the benefits of an employee who initially rates low levels of RTW

motivation, then reports average levels after 3 months, versus an employee who reports consistently average levels (with no growth/loss).

- **Causal modelling:** Although the use of interventions with random-control-trial methodologies (often considered the ‘gold-standard’ in research) are common within the RTW literature, these causal modelling processes are not universally adopted. Indeed, across many studies such processes would be impossible to achieve. However, other methodologies (e.g., quasi-experimental; Brough & Hawkes, 2019) could be employed to attenuate this knowledge gap regarding these causal relationships. Improving our understanding of the causal relationships between psychological reactions and employee outcomes will greatly enhance the design of future interventions and/or policy regarding RTW processes. This is especially relevant for variables directly associated with RTW confidence (i.e., perceived workability, RTW self-efficacy, and RTW expectations). For example, are these psychological reactions caused by diagnostic features? For example, we anticipated an employee told their recovery will take 6 months to exhibit less RTW self-efficacy, compared to a similar worker with a rehabilitation of 3 months. Greater understanding of such processes is strongly recommended, to inform the development of future interventions based on building RTW confidence or self-efficacy.
- **Model misspecification:** Model misspecifications generally occurs when important variables related to specific outcomes or predictors are not included in statistical analysis. This can cause biased analysis or lead researchers to misinterpret or misrepresent results. This is evident where processes usually found to hinder RTW outcomes actually demonstrate positive effects (or enablers are found to hinder employee outcomes). For example, Cornelius et al. (2011) found when supervisor’s consulted with healthcare professionals about the RTW of employees, delays to employee return actually increased. Similarly, for employees absent due to cardiac rehabilitation, increased work stress was associated with an increased RTW outcome (Salzwedel et al., 2020). These counter-intuitive results can be explained by several mechanisms, such that managers of severely unwell employees are more likely to seek healthcare advice (thus causing this observed relationship between support seeking and longer delays; Cornelius et al., 2011). Or employees who have successfully returned to work at follow-ups are likely to report increased work stress compared to those who have not returned (Salzwedel et al., 2020). In both of these examples, the addition of important control variables (i.e., illness severity and hours worked) would mitigate these counter-intuitive findings. We note there is no evidence of authors misinterpreting such findings (at worse such

counter-intuitive findings were generally ignored). However, we acknowledge that these findings if taken at face value, present a risk for scientific inquiry which 'cherry-picks' these findings, and/or could potentially bias estimates from meta-analyses where results across multiple studies are aggregated.

9.0 Recommendations

This project has highlighted the prevalence of negative psychological reactions following an injury or illness, with these symptoms resulting in both delayed RTW, and poor health outcomes for employees (Franché et al., 2009). Aiming to mitigate these negative outcomes, the following insights and recommendations were generated by this project:

1) Enhance employee screening processes for psychological injury risk factors: Identify opportunities to more effectively target specific indicators of delayed RTW, and negative psychological reactions to injury/illness.

- Expanding injured worker survey protocols will improve the earlier detection of at-risk individuals, or employees currently experiencing mental health issues due to injury/illness. This will enable an improved allocation of mental health resources to target these 'at risk' individuals.
- Screening should include both risk factors and positive outcomes, i.e., perceptions of social support, availability of workplace accommodations, perceived employee empowerment, which build on the existing evidence. This will provide an additional lens to examine the key stages which lead to successful RTW.
- In addition to prognostic value, data should be analysed in aggregate to inform policy development/success (e.g., uptake of workplace accommodation), and (where RTW outcome data is available) to update the accuracy and reliability of individual prognostic models.

2) Increase early intervention and contact during employee recovery: Enhance support for earlier intervention and regular contact in RTW process.

- Evidence suggests that initial successes (or failures) during employee recovery processes can produce lasting effects on both psychological reactions and successful RTW outcomes. Additional effort and focus are therefore recommended to ensure these initial processes are both supportive and implemented with minimal burden to employees to enhance successful RTW outcomes.
- Early and regular contact or support provided by employers is directly associated with reduced delays in returning to work. Efforts to facilitate this early and regular communication between employees and workplaces is recommended. Although we also acknowledge that the exact timing and frequency of this communication

requires further detailed assessment, especially relating to tailoring communications for specific injuries/illnesses.

- The quality of the communication by multiple stakeholders is also recommended as an area for further improvement. The qualitative interviews conducted suggest that some professionals may not be skilled in empathetic communication and mental health training, and could indirectly diminish an injured or sick worker's self-efficacy when returning to work, thus delaying the RTW process. Empathetic communication can be developed through empathy training, which typically focuses on increasing cognitive empathy (i.e., being aware of the emotional state of another person), emotional empathy (i.e., engaging with and sharing those emotions), and compassionate empathy (i.e., taking action to support other people).

3) Enhance support services, training and communication materials: Greater support to both injured employees and key stakeholders (including supervisors, managers, regulators, and health professionals) in managing psychological reactions and employee recovery.

- Perceived support received from medical, insurance, and RTW coordination staff during rehabilitation is associated with increased positive psychological reactions for injured employees (i.e., RTW self-efficacy). Improving the training, communication materials, and/or coordination processes tailored to each different stakeholder (managers, supervisors, case managers, etc.) is recommended to enhance the perceptions of support for employees during their recovery.
- The provision of support received from workplace managers, supervisors, and colleagues is strongly associated with increased positive psychological reactions and mitigates psychological injuries. Workplace processes and/or training designed to support these communications, or to develop high quality social support channels, is highly recommended. An increased access to information, training, and resources will also enhance employee support, early detection of psychological reactions, and facilitate faster employee recovery.

4) Provide greater access to workplace accommodations: Support further development and normalisation of workplace accommodations during employee recovery.

- Workplace accommodative processes (e.g., flexible scheduling, task modifications, graded return, or role changes) are directly associated with increased worker

recovery and serve as a buffer against negative psychological reactions resulting from injury and illness. It is recommended that organisations enhance their strategic RTW processes that enable this flexibility and facilitate confidence in employees returning to work post-injury or illness.

5) Increase employee empowerment in RTW process: Greater control, autonomy, and consultation regarding RTW decisions and planning processes.

- Decision authority and control are directly associated with beneficial psychological outcomes and a faster RTW for injured employees. It is recommended that organisations enhance their process which enable this employee control, so workers remain engaged with their RTW planning and feel supported during the RTW decision-making process.
- Empowerment among workers from remote locations or minority groups is also an area that requires further attention and resources. The grey literature comparison across relevant bodies in Australia, New Zealand, Canada, and the United Kingdom highlighted that the provision of targeted cultural and language support to workers of culturally and linguistically diverse (CALD) backgrounds in RTW settings is lacking in both the public and private sectors within Australia. Engagement with workers of CALD background can be enhanced with relevant cultural competence or agility training that aims to reduce the language and cultural barriers which commonly occur in communications with these employees.

6) Conduct further research on the effectiveness of RTW interventions: Investigate the causal processes which underlie the relationship between psychological reactions and shorter return to work outcomes.

- It is strongly recommended that research in this field adopts causal research designs and advanced statistical analyses. Such studies would greatly enhance the objective assessment and benefits of tailored RTW interventions. For example, although RTW confidence (i.e., RTW expectations, perceived workability, and RTW self-efficacy) are strongly related to positive worker outcomes, it remains unclear exactly how 'modifiable' these reactions are. For example, how much can RTW confidence be effectively enhanced through targeted interventions? How much is RTW confidence a function of injury severity? We note for example, how the inclusion of causal research designs and advanced statistical analyses in other

psychological research (e.g., occupation stress and employee wellbeing interventions) has successfully advanced knowledge in this field (e.g., Brough & Biggs, 2015; Wall, Cooper, & Brough, 2021). We anticipate that similar advancements could also be produced in this RTW area.

- It is also recommended that future research examine the casual relationships between positive psychological reactions (in particular, RTW self-efficacy) and RTW outcomes utilising mediation analysis or more advanced casual methodologies. It is recommended these mechanisms are explored prior to any large-scale investment in enhancing RTW interventions which include such processes.

10.0 Conclusions

This project assessed the psychological reactions exhibited by employees following an injury or illness resulting in their absence from work. Multisource information was collected via a systematic review of the scientific literature regarding psychological reactions to employee injury and illnesses, a review of the grey literature pertaining to workplace outcomes and processes, and qualitative interviews with key RTW stakeholders in multiple organisations. The findings identified the emergence of both negative and positive common psychological reactions for employees following an absence due to injury and illness. Negative emotional reactions hindering RTW included: depression, emotional distress, anxiety, fear-avoidant beliefs, and work stress. Positive psychological reactions identified to improve employee's RTW outcomes included: RTW self-efficacy, social support, positive RTW expectations, organisational support, and control/empowerment regarding RTW processes and planning. In addition, the antecedents and risk factors of these psychological reactions were also assessed. Although these factors differ for specific psychological reactions, generally low levels of perceived social support, increased severity of the primary injury/illness, and an absence of workplace accommodative practices, were each commonly associated with worse psychological outcomes for employees during their recovery and subsequent RTW.

The barriers and facilitators of RTW success were also assessed. Modifiable factors shown to improve an employee's RTW included: enhancing RTW motivation, positive coping styles, workplace support, role accommodations, low stress working environments, and empowering employee decision-making or control for the RTW processes. Best practices identified through the review of RTW organisational reports supports these processes. These reports highlighted the benefits of engaging the organisation throughout the employee recovery process. Evidence from Canada and the UK also identified access to workplace accommodative practices can support both employee return and also reduce negative psychological reactions.

It is therefore, clear that through the implementation of interventions based on scientific evidence, negative psychological reactions to employee injury and illnesses can be mitigated. Such processes enhance both employee wellbeing and mental health and also benefit subsequent RTW for injured/ill employees.

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Appendix A: Interview Questions

Based on prior research, Safe Work Australia's *National Return to Work Strategy 2020-2030* identified these five factors:

- Pain catastrophising/fear avoidance - leads to poorer return to work outcomes
- Concern about making a claim - leads to poorer return to work outcomes
- Recovery expectations - stronger expectations lead to better return to work outcomes
- Self-efficacy - greater self-efficacy leads to better return to work outcomes
- Perceived work ability - lower perceived work ability leads to poorer return to work outcomes

1) In your experience, what are some other factors (in addition to those identified above) relating to workers' psychological response to injury or illness that can affect their recovery and return to work, and would these factors be responsive to change?

2) What are some return to work policies and practices that have been put in place in your organisation?

2a) What positive or negative impact do these factors have on workers' return to work outcomes?

3) In your experience, what puts workers at risk of experiencing negative psychological responses to injury?

4) What signs might indicate a worker is experiencing negative psychological responses to injury?

5) At what points in the recovery and return to work process are there opportunities to identify and support workers who are at risk of or who are experiencing negative psychological responses to injury?

5a) What mechanisms can be put in place to identify and support these workers?

5b) Are there any critical knowledge gaps that require further research?

6) In your experience, what supports are known to, or could, assist workers in managing their psychological responses to injury?

7) Are there any case studies or best practice examples that you can share where you or your organisation have effectively supported workers and minimised the risk and impact of their negative psychological responses to a work-related injury or illness?

8) What are some other stakeholders and relevant groups and communities that you think would play an instrumental role in minimising the risk and impact of negative psychological responses to a work-related injury or illness for employees?

8a) Safe Work Australia has identified the relevant stakeholders as: Commonwealth, state and territory governments, insurers, employer and worker groups, workplace rehabilitation providers, health practitioners, and others. Have we left out any key stakeholder(s)?

9) Do you have any relevant material(s) -- meeting notes, research, reports, infographics, and others -- that you may be able to share with us?

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